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SPECIAL ISSUE CONTAINING THE PRELIMINARY ANNOUNCEMENT OF THE FIFTH NEW YORK MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE AND ASSOCIATED SOCIETIES, DECEMBER 27, 1928, TO JANUARY 2, 1929.  
EDITED BY BURTON E. LIVINGSTON, PERMANENT SECRETARY

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# SCIENCE

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No. 1770

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## PRELIMINARY ANNOUNCEMENT OF THE FIFTH NEW YORK MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE AND ASSOCIATED SOCIETIES

### THE ANNOUNCEMENT AND THE GENERAL PROGRAM

THIS special issue of SCIENCE is devoted mainly to the preliminary announcement of the approaching New York meeting of men and women of science in all its branches. This meeting will be the eighty-fifth meeting of the American Association and the fifth association meeting to be held in New York. It promises to surpass all earlier meetings in scope, in attendance and in importance to American science.

Those planning to attend the fifth New York meeting should arrange for lodging accommodations at once. A list of New York hotels and their prices has appeared in SCIENCE for November 9. The headquarters hotels for the various societies are shown in the section on associated and invited organizations in the present announcement. Requests for the reservation of hotel rooms should be addressed directly to the hotels.

All who are to present papers at New York should immediately send two copies of each manuscript to Mr. Austin H. Clark, association news manager, American Association for the Advancement of Science, Smithsonian Institution Building, Washington, D. C. Send a third copy to the society or section secretary in whose program the paper is to be presented. If the full manuscript is not sent, be sure to send an abstract.

When you purchase your railway ticket to New York secure a certificate for the New York meeting of the American Association for the Advancement of Science and Associated Societies, and bring the certificate with you to the registration offices for the meeting. (See the section on Railway Transportation in this announcement.)

Members should bring with them their salmon-colored membership cards, showing them to be enrolled for 1928-29.

The general program of this meeting (a book of about three hundred pages will be available at the registration offices in New York on Thursday, December 27, and throughout the week. Any member of the association who does not attend the meeting may secure a free copy of the program promptly by writing to the permanent secretary's office, Smithsonian Institution Building, Washington, D. C., provided the dues for 1928-29 have been paid and if the request is received before December 22. If received later, requests can not be attended to until after the close of the meeting. Non-members may secure copies of the program in the same way if they remit seventy-five cents for each copy.

#### EARLIER MEETINGS OF THE ASSOCIATION AT NEW YORK

The association has already met four times in New York: in August of 1887 (under the presidency of S. P. Langley), in June of 1900 (under the presidency of R. S. Woodward), in December of 1906 (under the presidency of William H. Welch), and in December of 1916 (under the presidency of Charles R. Van Hise). At the last-mentioned meeting the retiring presidential address was given, at the American Museum, by Dr. W. W. Campbell, president of the University of California (then director of the Lick Observatory). Other public lectures at that meeting were by Dr. Simon Flexner, director of the Rockefeller Institute of Medical Research, who spoke on "Infantile Paralysis and the Public Health," and by Dr. Arthur A. Noyes, director of the Gates Chemical Laboratory, Pasadena, California (then director of physico-chemical research at the Massachusetts Institute of Technology), who spoke on "Nitrogen and Preparedness." It is interesting to note that Dr. Noyes is now the retiring president of the association and that he will give the retiring presidential address at the meeting now announced. A smoker given at the Aquarium by the New York Zoological Society for workers in the natural sciences was especially attractive and very largely attended. Arrangements were adopted by the Committee of One Hundred on Scientific Research, which held a very successful session on the day after Christmas, by which its subcommittees were afterwards taken over into the National Research Council, which was in process of organization at that time. The records of that meeting state that it was much more adequately reported in the press than had ever occurred before. The meeting had front-page space in many dailies and it was suitably discussed in many editorial articles. The first receipt of income from the Colburn bequest was reported, and the Committee on Grants for Research

was organized to make allotments in aid of research. Four thousand dollars was appropriated for allotment by the committee. At that meeting the enrolment of the association was reported as about 12,000. The enrolment is now over 17,000. An important feature of the former meeting was the very successful scientific exhibition, in University Hall, Columbia University, where the exhibition is to be held this year.

#### THE FIFTH NEW YORK MEETING

This is one of the larger four-yearly meetings, which are held in rotation at Washington, New York and Chicago. It is consequently twelve years since the last New York meeting, mentioned above, and it will be twelve years hence when the association will next meet at the American metropolis. For science and education and for intellectual culture in general, the meeting now announced is a very great event.

This meeting is held under the presidency of Henry Fairfield Osborn, president of the American Museum of Natural History, eminent paleontologist and educator, organizer of one of the greatest of museums for research and education. It is not often that the association is so fortunate as it is this year, in having as president for the meeting a man of science whose activities are centered in a great scientific institution located in the city where the meeting is held. Throughout the year President Osborn has been actively and enthusiastically interested in the preparations and arrangements for this meeting and many of its unusually excellent features will be due to his care and forethought.

The retiring president for this meeting is Dr. Arthur A. Noyes, chemical investigator and leader in chemical education, director of the Gates Chemical Laboratory of the California Institute of Technology. Dr. Noyes will deliver the retiring presidential address, at the American Museum of Natural History, on the evening of Monday, December 31. His topic will be "The Story of the Elements."

The association is greatly indebted to the members of the local committees on arrangements for the excellent manner in which the numerous and complicated details of preparation have been provided for, especially to Dean George B. Pegram, Dr. Sam F. Trelease and Miss Helen A. Warren, who, with President Osborn, have given a very great deal of time and thought to these things. It is already clear that the arrangements will be exceptionally satisfactory.

The association and the associated societies that meet with it at New York are to be especially the guests of the American Museum of Natural History, Columbia University and the Metropolitan Museum of Art. A large number of New York institutions



and organizations are cooperating with the local committees on arrangements in extending a cordial welcome to the many thousands of science workers and friends of science who will attend. A list of these cooperating institutions, together with the names of their special representatives, has appeared in *SCIENCE* for August 10. Forty-seven societies are planning to meet with the association this year and there will be many joint sessions.

The period of this New York meeting includes a Sunday, December 30, a feature that has not characterized our meeting period for several years. No regular scientific sessions are scheduled for Sunday, but arrangements are in progress for interesting and inspirational excursions and in some of the churches of New York sermons or discourses are to be given that will attract many of those attending the meeting. A special complimentary concert has been arranged for Sunday afternoon by the New York Philharmonic Symphony Orchestra, and in the evening there will be a general reception to those attending the meeting, given by the Metropolitan Museum of Art, Fifth Avenue at 82nd Street.

#### THE GENERAL LOCAL COMMITTEE AND LOCAL REPRESENTATIVES OF SECTIONS

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A specially printed bulletin showing the personnel of the several special local committees, the section committees and the local advisory committees for the sections of the association, the names and officers of the societies meeting with the association this year, together with the names of the general officers of the association, may be had from the permanent secretary's Washington office by association members who request it.

##### *Local Representatives for Sections*

*Section A (Mathematics)*, W. Benjamin Fite, Columbia University.

*Section B (Physics)*, Harold W. Webb, Columbia University.

*Section C (Chemistry)*, R. R. Renshaw, New York University.

*Section D (Astronomy)*, Clyde Fisher, American Museum.

*Section E (Geology and Geography)*, Charles P. Berkey, Columbia University.

*Section F (Zoological Sciences)*, G. K. Noble, American Museum.

*Section G (Botanical Sciences)*, Tracy E. Hazen, Barnard College, Columbia University.

*Section H (Anthropology)*, Franz Boas, Columbia University.

*Section I (Psychology)*, Henry E. Garrett, Columbia University.

*Section K (Social and Economic Sciences)*, Robert M. MacIver, Barnard College, Columbia University.

*Section L (Historical and Philological Sciences)*, Franz Boas, Columbia University.

*Section M (Engineering)*, Calvin W. Rice, American Society of Mechanical Engineers.

*Section N (Medical Sciences)*, C. R. Stockard, Cornell University Medical College.

*Section O (Agriculture)*, O. S. Morgan, Columbia University.

*Section Q (Education)*, Goodwin B. Watson, Teachers College, Columbia University.

*For organizations not related to any particular section*, Sam F. Trelease, Columbia University.

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The council consists of: (1) the president, the general secretary, the permanent secretary and the treasurer; (2) the members of the executive committee not otherwise members of the council; (3) the chairmen of the sections; (4) the section secretaries; (5) the representatives of the affiliated organizations, and (6) eight elected members. The elected members of the council are as follows, the number shown in parenthesis being that of the calendar year at the end of which the member's term of office is to expire.

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L. E. Dickson (1930), University of Chicago, Chicago, Ill.

David White (1930), U. S. Geological Survey, Washington, D. C.

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D. T. MacDougal (1928), Desert Laboratory, Tucson, Ariz.

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W. Lash Miller (1930) (for Chemistry), 8 Hawthorne Ave., Toronto, Canada.

Oswald Veblen (1930) (for Mathematics), Princeton University, Princeton, N. J.

L. G. Hoxton (1929, *Chairman of the Committee*) (for Physics), University of Virginia, University, Va.

Vernon Kellogg (1929) (for Zoology), National Research Council, Washington, D. C.

Joseph Erlanger (1928) (for Physiology), Washington University School of Medicine, St. Louis, Mo.

Nevin M. Fenneman (1928) (for Geology), University of Cincinnati, Cincinnati, Ohio.

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THAT ARE TO MEET WITH THE ASSOCIATION  
AT NEW YORK, THEIR OFFICERS  
AND COUNCIL REPRESENTATIVES  
AND THEIR HOTEL HEADQUARTERS  
AND MEETING PLACES

(Arranged in the order of the sections of the association with which they are most closely related)

Each affiliated society has one or two representatives in the association council, as indicated by one or two asterisks before the society name. A cross before a name indicates that the society is associated but not affiliated.

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**\*\*American Association of Economic Entomologists.** (McAlpin Hotel; meeting place, Teachers College, Columbia University.) *President*, W. B. Herms; *Secretary*, C. W. Collins, Melrose Highlands, Mass.; *Council Representatives*, George A. Dean and Glenn W. Herrick.

**\*American Society of Parasitologists.** (McAlpin Hotel; meeting place, Teachers College, Columbia University.) *President*, C. A. Kofoid; *Secretary*, W. W. Cort, 615 N. Wolfe St., Baltimore, Md.; *Council Representative*, H. B. Ward.

**\*\*Botanical Society of America.** (Lincoln Hotel; meeting place, Teachers College, Columbia University.) *President*, A. H. Reginald Buller; *Secretary*, A. J. Eames, New York State College of Agriculture, Ithaca, N. Y.; *Council Representatives*, H. H. Bartlett and I. F. Lewis.

**\*\*American Phytopathological Society.** (Lincoln Hotel; meeting place, Teachers College, Columbia University.) *President*, H. P. Barss; *Secretary*, R. J. Haskell, Bureau of Plant Industry, Washington, D. C.; *Council Representatives*, Claud Wilbur Edgerton and Donald Reddick.

**\*American Society of Plant Physiologists.** (Lincoln Hotel; meeting place, Teachers College, Columbia University.) *President*, E. J. Kraus; *Secretary*, H. R. Kraybill, Purdue University, Lafayette, Ind.; *Council Representative*, Charles A. Shull.

**†American Fern Society.** (Lincoln Hotel; meeting place, Teachers College, Columbia University.) *President*, William R. Maxon; *Secretary*, Charles S. Lewis, 345 Hamilton Ave., Trenton, N. J.

**†Sullivant Moss Society.** (Lincoln Hotel; meeting place, Teachers College, Columbia University.) *President*, R. S. Williams; *Secretary*, A. T. Beals, 2929 Broadway, New York, N. Y.

**\*\*American Society of Naturalists.** (McAlpin Hotel; meeting place, American Museum of Natural History.) *President*, H. H. Donaldson; *Secretary*, L. J. Cole, College of Agriculture, Madison, Wis.; *Council Representatives*, Robert A. Budington and H. H. Bartlett.

**\*\*Ecological Society of America.** (Lincoln Hotel; meeting place, Teachers College, Columbia University.) *President*, Homer L. Shantz; *Secretary*, A. O. Weese, University of Oklahoma, Norman, Okla.; *Council Representatives*, William S. Cooper and Chancey Juday.

**\*\*American Microscopical Society.** (McAlpin Hotel; meeting place, Teachers College, Columbia University.) *President*, Paul S. Welch; *Secretary*, H. J. Van Cleave, University of Illinois, Urbana, Ill.; *Council Representatives*, Paul S. Welch and H. J. Van Cleave.

**†Phi Sigma Biological Research Society.** (McAlpin Hotel; meeting place, Teachers College, Columbia University.) *President*, Paul B. Sears; *Secretary*, C. I. Reed, University of Illinois College of Medicine, Chicago, Ill.

**Genetics Sections, American Society of Zoology and Botanical Society of America.** (Meeting place, Teachers College, Columbia University.) *Chairman*, H. J. Muller; *Secretary*, L. C. Dunn, Columbia University, New York, N. Y.

**\*\*American Anthropological Association.** (Endicott Hotel; meeting place, American Museum of Natural History.) *President*, M. H. Saville; *Secretary*, A. Irving Hallowell, University of Pennsylvania, Philadelphia, Pa.; *Council Representatives*, C. E. Guthe and Herbert J. Spinden.

**†Archaeological Institute of America.** (Park Central Hotel; meeting place, Metropolitan Museum of Art.) *President*, Ralph Van Deman Magoffin; *Secretary*, Rollin H. Tanner, New York University, New York, N. Y.



†*American Folk-Lore Society.* (Endicott Hotel; meeting place, American Museum of Natural History.) *President*, Alfred M. Tozzer; *Secretary*, Gladys A. Reichard, Barnard College, New York, N. Y.

\*\**American Psychological Association.* (Pennsylvania Hotel; meeting place, Columbia University.) *President*, Edwin G. Boring; *Secretary*, Samuel W. Fernberger, University of Pennsylvania, Philadelphia, Pa.; *Council Representatives*, W. V. Bingham and Robert Morris Ogden.

†*Metric Association.* (Meeting place, Columbia University.) *President*, George F. Kunz; *Secretary*, Howard Richards, 156 Fifth Ave., New York, N. Y.

\*\**History of Science Society.* (Meeting place, Columbia University.) *President*, Lynn Thorndike; *Secretary*, Frederick E. Brasch, Library of Congress, Washington, D. C.; *Council Representatives*, F. B. Dains and Joseph Mayer.

\**Linguistic Society of America.* (Marseilles Hotel; meeting place, Columbia University.) *President*, Franz Boas; *Secretary*, Roland G. Kent, University of Pennsylvania, Philadelphia, Pa.; *Council Representative*, Edward Sapir.

*American Philological Society.* (Park Central Hotel; meeting place, Metropolitan Museum of Art.) *President*, Clarence P. Bill; *Secretary*, Joseph W. Hewitt, Wesleyan University, Middletown, Conn.

*College Art Association.* (Park Central Hotel; meeting place, Metropolitan Museum of Art.) *President*, John Shapley; *Secretary*, James B. Munn, New York University, New York, N. Y.

\*\**American Society of Agronomy.* (McAlpin Hotel; meeting place, Teachers College, Columbia University.) *President*, A. G. McCall; *Secretary*, P. E. Brown, Iowa State College, Ames, Iowa; *Council Representatives*, Burt L. Hartwell and Robert M. Salter.

\**Society of American Foresters.* (McAlpin Hotel; meeting place, Teachers College, Columbia University.) *President*, O. M. Butler; *Secretary*, Ward Shepard, U. S. Forest Service, Washington, D. C.; *Council Representative*, Harris Collingwood.

\**American Society for Horticultural Science.* (McAlpin Hotel; meeting place, Teachers College, Columbia University.) *President*, C. P. Close; *Secretary*, Harold B. Tukey, Agricultural Experiment Station, Geneva, N. Y.; *Council Representative*, Maxwell Jay Dorsey.

†*Association of Official Seed Analysts of North America.* (McAlpin Hotel; meeting place, Teachers College, Columbia University.) *President*, E. H. Toole; *Secretary*, A. L. Stone, University of Wisconsin, Madison, Wis.

†*Potato Association of America.* (McAlpin Hotel; meeting place, Teachers College, Columbia University.) *President*, F. M. Harrington; *Secretary*, H. C. Moore, Agricultural Experiment Station, East Lansing, Mich.

†*Gamma Sigma Delta Honor Society of Agriculture.* *President*, W. E. Grimes; *Secretary*, C. A. Iverson, Iowa State College, Ames, Iowa.

*Geneticists Interested in Agriculture.* (Meeting place, Teachers College, Columbia University.) *Chairman*, C. M. Woodworth; *Secretary*, Elmer Roberts, University of Illinois, Urbana, Ill.

\**American Nature-Study Society.* (McAlpin Hotel; meeting place, American Museum of Natural History.) *President*, Bertha Chapman Cady; *Secretary*, E. Laurence Palmer, State College of Agriculture, Ithaca, N. Y.; *Council Representative*, J. Andrew Drushel.

\*\**Society of the Sigma Xi.* (Meeting place, Columbia University.) *President*, F. R. Moulton; *Secretary*, Edward Ellery, Union College, Schenectady, N. Y.; *Council Representatives*, Edward Ellery and F. R. Moulton.

\*\**American Association of University Professors.* (Lincoln Hotel; meeting place, Casa Italiana, Columbia University.) *President*, Henry Crew; *Secretary*, H. W. Tyler, Massachusetts Institute of Technology, Cambridge, Mass.; *Council Representatives*, J. M. Coulter and S. A. Mitchell.

†*Gamma Alpha Graduate Scientific Fraternity.* (Lincoln Hotel.) *President*, G. W. Martin; *Secretary*, Sidney M. Cadwell, U. S. Rubber Co., 58th St. and 11th Ave., New York, N. Y.

*Sigma Delta Epsilon Graduate Women's Scientific Fraternity.* *Secretary*, Josephine Glasgow, 236 Manning Blvd., Albany, N. Y.

*Pi Mu Epsilon Mathematical Fraternity.* *Director General*, E. D. Roe, Jr., 123 W. Ostrander Ave., Syracuse, N. Y.

#### THE NEWS SERVICE AT THE NEW YORK MEETING

The object of the news service of the association is to inform the general public through the press regarding the progress in American science as illustrated by the papers presented at the annual meetings. This phase of the association's activities is yearly becoming of more and more importance. A brief consideration of the recent trend in social developments in America clearly shows why this is true.

Fifty years ago every man was able to live his own life as he saw fit within very broad limits, to amass wealth which was considered as his own and not subject to appraisal by others, to spend his entire income in any way he chose, or to pursue any kind of scientific activities he wished, regardless of what others thought of them. At the present time conditions are quite different. Every community takes a lively interest in the affairs and activities of each constituent member. His property is appraised, and he pays a personal property tax, an income tax and an inheritance tax.

The concrete idea of taxing a man's ability to amass wealth and his productive ability goes hand in hand with the abstract idea that in the same way the community has a proprietary interest in the mental capacity or intellectual capital of the scientific worker and in the results of his researches, the latter being regarded as more or less the equivalent of an annual income measured in terms of public interest and personal prestige instead of in dollars.

A community is no longer an aggregation of independent individuals; it has become instead a social unit in which every individual is interested to a greater or lesser degree in the activities and abilities of every other. The millionaire and the laborer alike now take a lively interest in the output of the research workers because both realize that their combined efforts in organization, finance, direction and production create the income for the endowment or personal capital that makes scientific work possible. The interest in science of the community as a whole is shown by the fact that at the present time all classes acquiesce in the setting aside for research work of increasingly large sums of money derived from general taxation.

This new attitude toward science on the part of the people as a whole must be met by a corresponding broadening of interests and contacts on the part of research workers. It is only through the window of the press that the people as a whole view science. It is the duty of the scientific workers to assist in helping to make the picture clear and comprehensive. The news service of the association was established for the purpose of acting as the intermediary between the members and the press, and it is a pleasure to be able to say that in the brief two years of its existence the work of the news manager has more than doubled.

At the New York meeting the press representatives will be supplied with just as much information as it is possible to assemble, and it is hoped that the greater part will be ready for use long before the date of release. In order to receive adequate attention a manuscript should be in the hands of the news manager at least a week before the actual date of presentation of the paper.

Immediately upon receipt all manuscripts are conspicuously marked with the date and time of release and before that time they will be regarded as strictly confidential communications, accessible only to accredited representatives of the press. Consequently there need be no hesitation in sending in accounts of new and unpublished work.

Both manuscripts and abstracts should be written in the simplest possible language so that they may readily be understood by any one with a good education but with no knowledge of the subject treated. Especially should the broader aspects of the subject-matter be indicated and the bearing which it has or may in the future have on work in other lines.

The news manager is ready at all times to answer any questions regarding the news service, so far as is possible. But it must be remembered that as the time of the meeting approaches his correspondence becomes increasingly heavy, amounting in the week

before the meeting to from fifty to eighty or more letters a day, so that it becomes difficult to do justice to all the communications received.

#### THE NEW YORK PRIZE

The sixth annual award of the American Association Prize, of one thousand dollars, will occur at the close of the New York meeting. A generous member of the association, who does not wish his name made known, has given the funds for the five prizes that have already been awarded and also additional funds for five more prizes, including the one to be awarded this year. It is expected that the annual award will be continued indefinitely. The prize is awarded each year to the author of a noteworthy contribution<sup>3</sup> to science presented at the annual meeting. All papers presented in any of the programs of the New York meeting are to be eligible for consideration by the Committee on Award; it is not necessary that the author be a member of the association. There is to be no open competition and no submitting of papers for the prize. The rules and procedure by which the award is to be made were published in *SCIENCE* for November 25, 1927. The award will be announced at the close of the meeting, through the association news service.

#### TRANSPORTATION TO AND FROM NEW YORK

Reduced railway rates, by the certificate plan, have been granted for this meeting by the railway passenger associations of the United States and Canada, whose courtesy and public spirit will be greatly appreciated. The round-trip fare for a person attending the meeting is to be one and one half times the regular one-way fare.

Tickets to New York are to be purchased within time limits as follows: December 24 to 29, inclusive, for the following lines: Canadian Eastern lines, New England lines, Trunk lines, Central lines and South-eastern lines. For the Western and Transcontinental lines the limits are December 19 to 24 from California; December 20 to 25 from Arizona, British Columbia, Northern Idaho, Nevada, Washington and Oregon (except *via* California); December 21 to 26 from Montana, southern Idaho and Utah; December 22 to

<sup>3</sup> The selected paper may sometimes be the most notable contribution presented, but there is obviously no way by which important contributions in different scientific fields may be satisfactorily compared as to their several degrees of goodness. The wording in the text is strictly accurate and official and such superlatives as "best" and "most noteworthy" are not to be applied under any circumstances.—B. E. L.



27 from New Mexico, Wyoming and Colorado (except Julesburg); December 23 to 28 from Colorado (Julesburg only), Iowa (except Keokuk), Kansas, Manitoba (on the Great Northern, the Northern Pacific and the Milwaukee, St. Paul and Sault Ste. Marie railways, also from Winnipeg *via* the Canadian National and Canadian Pacific railways), Minnesota, Missouri (except Hannibal and St. Louis), Nebraska, Northern Michigan, North Dakota, South Dakota and Wisconsin; December 24 to 29 from Illinois, St. Louis, Mo., Hannibal, Mo. and Keokuk, Iowa. For those coming from Oregon *via* California the time limits for purchasing tickets are December 18 to 23. For Canadian Western lines the time limits are December 20 to 25 from points in the province of British Columbia; December 22 to 27 from Alberta; December 23 to 28 from Saskatchewan, Manitoba and Ontario west of Port Arthur and Armstrong. For the Southwestern lines the limits are December 22 to 27 from Oklahoma and Texas; December 23 to 28 from Kansas and Missouri; December 24 to 29 from Arkansas and Louisiana, also from Memphis and Natchez; December 16 to 21 from Texas *via* New Orleans and Southern Pacific Co. (Southern Pacific Steamship lines, "Morgan line"), or *via* Galveston and Mallory Steamship lines; December 18 to 23 from Louisiana *via* New Orleans and Southern Pacific Co. (Southern Pacific Steamship lines, "Morgan line"). The following Southwestern lines do not offer the reduced excursion fares: Arkansas and Louisiana-Missouri Railway, Fort Smith and Western Railroad, Graysonia, Nashville and Ashdown Railroad, Louisiana and Arkansas Railway, Kansas, Oklahoma and Gulf Railway, Mississippi River and Bonne Terre Railway and National Railways of Mexico. All time limits stated above are to be read as inclusive.

Persons residing in the regions of reduced rates (almost all the United States and Canada) should each purchase a first-class, full-fare, one-way, through ticket to New York, being sure to secure a certificate on the "Standard Certificate Form," reading for the New York meeting of the "American Association for the Advancement of Science and Associated Societies." A receipt is not required.

Persons residing outside the regions of reduced rates should each purchase a round-trip ticket to the nearest station issuing through tickets to New York and situated within the region of reduced rates. On arrival at that station a one-way ticket to New York and a certificate, as directed in the preceding paragraph, should be secured.

Upon arrival at New York every one should register immediately, at the registration offices for the meeting, in University Hall, Columbia University, at

the American Museum, at the Metropolitan Museum or at the Engineering Building (29 West 39th Street). Be sure to fill in all blanks on the registration card and leave the card at the registration desk, where you will receive a numbered identification card, which will be receipted for the registration fee paid. (See Registration, below.) Then leave your railway certificate at the validation desk, being sure that the identification card (which you keep) is there marked to show that you have deposited a certificate. Your certificate will subsequently be endorsed by the association and then validated by the agent of the transportation companies. Call for it later at the validation desk, where you left it, presenting your identification card.

Unvalidated certificates will not be honored for the purchase of return tickets and unendorsed certificates can not be validated. Registration is therefore necessary in order to have a railway certificate validated. Each person registering is entitled to the validation of his own certificate.

For the return trip, railway agents at New York will honor any properly endorsed and validated certificate if presented at least thirty minutes before the scheduled time of departure of the train for which it is to be used. Each person presenting an endorsed and validated certificate may purchase a continuous-passage, one-way, return ticket for one half of the regular fare, by the same route as that followed on the trip to New York. The last date on which certificates may be validated is January 2. The last date on which return tickets may be purchased is January 5.

Some trouble may be avoided if sleeping-car accommodations are reserved upon arrival at New York before going to hotels or meeting places.

#### TRANSPORTATION IN NEW YORK

The local committee has arranged for the distribution of an attractive folder at the meeting, including an excellent city map and much information about the metropolis. The Hotel Association of New York is to furnish an excellent map folder for distribution at the meeting.

#### *To reach hotels from railway stations*

Directions for reaching hotels may be obtained by inquiry at the information desk in the station. Many will find it most convenient to use taxicabs to reach the downtown hotels; the distances are short and the rates low.

Some of the principal hotels may be reached as follows:

*Lincoln Hotel* (8th Avenue and 44th Street). From Pennsylvania Station, take uptown subway to Times Square, walk one block west to 8th Avenue and two blocks north to 44th Street (about five minutes). From Grand Central Station, take west-bound 42nd Street surface car to 8th Avenue and walk two blocks north to 44th Street, or take subway shuttle train to Times Square and walk two blocks north and one block west (about ten minutes).

*Astor Hotel* (Broadway and 44th Street). From Pennsylvania Station, take uptown subway to Times Square and walk two blocks north to 44th Street and Broadway (about five minutes). From Grand Central Station, take west-bound 42nd Street surface car to Broadway and walk two blocks north to 44th Street, or take subway shuttle train to Times Square and walk two blocks north on Broadway (about ten minutes).

*McAlpin Hotel* (Broadway and 34th Street). From Pennsylvania Station, walk one block east on 34th Street to Broadway (about three minutes). From Grand Central Station, take subway shuttle train to Times Square, then downtown subway to Pennsylvania Station, and walk one block east on 34th Street to Broadway (about ten minutes).

*Hotel Bretton Hall* (Broadway and 86th Street). From Pennsylvania Station, take uptown local subway to 86th Street and Broadway (about ten minutes). From Grand Central Station, take subway shuttle train to Times Square and then uptown local subway to 86th Street and Broadway (about fifteen minutes).

*Endicott Hotel* (Columbus Avenue and 81st Street). From Pennsylvania Station, walk one block east and take 6th Avenue elevated train to 81st Street; or take local subway to 79th Street and Broadway and walk two blocks east and two blocks north (about twenty minutes). From Grand Central Station, walk three blocks west and take the 6th Avenue elevated train to 81st Street; or take subway shuttle train to Times Square and then uptown local subway to 79th Street and walk two blocks east and two blocks north (about twenty-five minutes).

*Marseilles Hotel* (Broadway and 103rd Street). From Pennsylvania Station, take Broadway-7th Avenue express subway (*see note, below*) to 103rd Street (about fifteen minutes). From Grand Central Station, take subway shuttle train to Times Square and then uptown Broadway-7th Avenue express subway (*see note, below*) to 103rd Street (about twenty-five minutes).

*Pennsylvania Hotel* (7th Avenue and 33rd Street). Opposite the Pennsylvania Station. From Grand Central Station, take subway shuttle train to Times Square and then downtown subway to Pennsylvania Station (about ten minutes).

#### *To reach meeting places from railway stations*

*The American Museum of Natural History* (77th Street and Columbus Avenue). From Pennsylvania Station, take uptown local subway to 79th Street and walk two blocks south, then two blocks east; or walk two blocks west on 34th Street to 9th Avenue, take the 9th Avenue elevated train to 81st Street and walk four blocks

south (about twenty minutes). From Grand Central Station, take subway shuttle train to Times Square, then uptown local subway to 79th Street, and walk two blocks south and two blocks east (about twenty-five minutes).

*Columbia University* (Broadway or Amsterdam Avenue and 116th Street). From Pennsylvania Station, take uptown Broadway-7th Avenue express subway (*see note, below*) to 116th Street (about twenty minutes). From Grand Central Station, take subway shuttle train to Times Square and then uptown Broadway-7th Avenue express subway (*see note, below*) to 116th Street (about thirty minutes).

#### *To reach meeting places from hotels*

*The American Museum of Natural History* may be reached from hotels by taking elevated trains on 6th Avenue at 34th Street, 42nd Street, or 50th Street, or on 8th Avenue at 53rd Street, to 81st Street and walking four blocks south. It may be reached by taking an uptown Broadway or 7th Avenue local subway to 79th Street and walking two blocks south and two blocks east. Or it may be reached by taking a north-bound 8th Avenue surface car to 77th Street and Central Park West. (About twenty minutes from Times Square.)

*Columbia University* is reached from hotels by taking a Broadway-7th Avenue local or express subway (*see note, below*) to 116th Street. Stations are on 7th Avenue at Pennsylvania Station (33rd Street), and on Broadway at Times Square (42nd Street), 50th Street, and 59th Street. (About twenty minutes from Times Square.)

#### *Transportation between Columbia University and the American Museum of Natural History*

To go from Columbia University to the American Museum of Natural History, take a downtown local subway (at 116th Street and Broadway) to 79th Street, then walk two blocks south and two blocks east; or take surface car on Amsterdam Avenue to 77th Street and walk one block east. For opposite trip, reverse this procedure; if you make the trip by subway, be sure to take a Broadway-7th Avenue train (*see note, below*).

#### *Special Note on Subway Trains*

To reach Columbia University and other points north of 96th Street on Broadway, it is necessary to take a Broadway-7th Avenue express or local train, marked by signs in the windows reading "Broadway-7th Avenue Express" or "Broadway-7th Avenue Local," followed by "Van Cortlandt Park," "Dyckman Street," or "Broadway." Avoid trains with green headlights; they are marked "7th Avenue-Bronx Park" or "7th Avenue-Lenox Avenue" and they switch at 96th Street; but if you have taken one of these trains, change at 96th Street to a Broadway train.

#### *Taxicabs in New York*

Taxicabs may of course be secured at railway stations, at hotels and at many stands in prominent streets. "Cruising" cabs are so common on the streets that one



rarely has to wait five minutes to secure one. The rates are marked on the taxicabs; the usual rate is fifteen cents for the first one fourth mile and five cents for each additional one fourth mile, with no extra charge for additional passengers up to four.

#### *Fifth Avenue Buses*

Columbia University may be reached by taking a north-bound Fifth Avenue bus (no. 1, 4, 5, or 8) to 116th Street or 120th Street and Riverside Drive and walking two blocks east (time, from 42nd Street, about forty-five minutes). Numbers 5 and 8 go up Fifth Avenue and turn west on 57th Street, north on Broadway, west on 72nd Street and north on Riverside Drive. Numbers 1 and 4 follow Fifth Avenue and turn west on 110th Street and north on Riverside Drive. Buses stop at far corners of even-numbered streets and at special places marked by signs.

#### HOTEL ACCOMMODATIONS

A list of New York hotels and their rates has appeared in *SCIENCE* for November 9. A supplementary list may be secured by writing to the permanent secretary's Washington office.

The Lincoln Hotel (8th Avenue and 44th Street) is to be general headquarters for the American Association. Headquarters hotels for the societies meeting with the association are shown in this announcement, in the section on Associated and Invited Organizations.

Reservations for hotel accommodations should be made at once, by writing directly to the hotels, stating the kind of room desired, the approximate price and the date on which the room is to be occupied. Those who neglect to make reservations may possibly have difficulty in quickly securing the sort of accommodation wanted. There are, however, plenty of hotels in New York.

#### REGISTRATION AT THE NEW YORK MEETING

The main registration office for the meeting will be in University Hall, Columbia University. Branch registration offices are to be at the American Museum of Natural History, the Metropolitan Museum, the American Geographical Society Building and the Engineering Building (29 West 39th Street). Registration is to be in charge of Mr. Sam Woodley, executive assistant of the American Association. The offices will be open from 9 to 6 daily, throughout the period of the meeting. Registration is necessary in order to secure the official identification card, the official badge, the general program, etc., and in order that railway certificates may be endorsed and validated. All who attend any of the sessions should register as promptly as possible, whether they are members of the association or not, using official registration cards that will be provided.

The registration fee is two dollars, but paid-up members of the American Association for the Advancement of Science may register for one dollar. Associates for this meeting and visitors from outside of the United States and Canada who present personal invitations as guests of the association are to pay no registration fees. Registration fees will be applied to help defray some of the costs of the meeting. *Life members and paid-up annual members are asked to show their salmon-colored membership cards for 1928-29 when they register.* Members who have not done so previously may pay their dues at the registration offices before they register and non-members may join the association or may become associates for this meeting, paying their dues before they register.

To register, fill in the blanks on a registration card and present the card at the registration desk, paying the registration fee. The registration clerk will keep the card and will give you a numbered official identification card, together with the badge for the meeting, a copy of the general program, etc. Leave your railway certificate at the validation desk, where your identification card will be marked to show that a certificate has been left. (See above, under Transportation to and from New York.) Delegates from institutions and organizations, and all personally invited guests, are specially requested to register as such, noting on their registration cards their exact status in this particular.

#### INVITED GUESTS

Visitors from outside of the United States and Canada who are not members of the association may be invited to the meeting as guests. Members of the association may recommend to the permanent secretary persons who should receive official invitations, giving reasons. Such recommendations should arrive in the permanent secretary's Washington office before December 20.

#### MEMBERSHIP

The approach of the great annual meeting gives an opportune time for increasing our membership, and all members are asked to secure new members or to send to the permanent secretary's Washington office names and addresses of persons who might be interested in the association. This request is effective throughout the year but it is specially desirable that a large number of new members be enrolled before the opening of the meeting.

Copies of a booklet on "The Organization and Work of the American Association," as well as membership application cards and sample copies of the journals, may be secured at any time from the per-

manent secretary's Washington office. Membership in the association includes a subscription to the weekly journal *SCIENCE*, or *The Scientific Monthly*, for the calendar year beginning at the close of the annual meeting. The journal alone is worth more than the annual membership dues. By special arrangement with the publishers, members in good standing may have both *SCIENCE* and *The Scientific Monthly* by paying \$3.00 in addition to the annual dues (\$8.00 in all). Members of the association may also subscribe for *The Science News-Letter*, published by Science Service, Washington, D. C., at the specially reduced price of \$3.00 per year.

New members of the association regularly pay an entrance fee of five dollars, which is now remitted, however, to members of any affiliated organization, including the affiliated state academies. Those who take advantage of this privilege and join at the New York meeting should fill in the blanks on a blue membership application card and present card and dues for 1928-29 (\$5.00) when they register.

#### INFORMATION SERVICE, MAIL, EXPRESS, TELEGRAMS, ETC., AT THE NEW YORK MEETING

Those in attendance at the meeting may obtain information of all sorts by applying at the information desk in one of the registration offices. Attention is called, however, to the visible directory of those in attendance, from which information regarding attendance and the addresses of attending members of the association and societies may be obtained. The visible directory will be located in the main registration office, in University Hall, Columbia University.

Persons attending the meeting may have mail, etc., addressed to them in care of the American Association for the Advancement of Science, either at the main registration office or at a branch office. They should inspect the personal bulletin every day, which will be conveniently located. If a person's name appears on this bulletin, he should inquire at the proper desk for mail, etc. Uncalled-for telegrams will be sent to hotels each afternoon when the registration offices close.

#### THE SECRETARIES' CONFERENCE

The Secretaries' Conference is a special committee of the association recently organized for the purpose of supplying much-needed facilities for the interchange of thought among the secretaries of the association and of its affiliated societies and to provide a means by which the consensus of opinion of these experienced and active officers may be more readily secured. The conference bridges a gap between the section organizations and the affiliated societies, on

the one hand, and the executive committee and the association council on the other hand.

The conference has a secretary, who corresponds with the members during the year concerning subjects and questions that are raised by the members. He summarizes the results of his correspondence and prepares a program for the annual meeting of the conference. The conference secretary for any year becomes the chairman for the annual session that closes his year and a new secretary is to be elected at the opening of each annual session. The session of the conference at the New York meeting is to occur Sunday evening, December 30, at the Hotel McAlpin, Broadway at 34th Street. Invitations to the conference session and the complimentary conference dinner will be issued from the Washington office of the association. Further details in this connection have been presented in an article on the Secretaries' Conference by Dr. Geo. T. Hargitt, of Syracuse University, secretary of the Conference, in *SCIENCE* for November 16.

#### BUSINESS SESSIONS OF THE ASSOCIATION

Matters for consideration by the council are first referred to the executive committee. As far as possible, all matters that are to be considered at any time in the period of the New York meeting are to be presented in memoranda sent to the permanent secretary's Washington office, to arrive before December 20. During the meeting period memoranda for consideration by the executive committee should reach the permanent secretary as promptly as possible, (1) through the information clerk at one of the branch registration offices, (2) by being handed in personally at the main registration office (University Hall, Columbia University) or (3) by being left at the desk of the Lincoln Hotel, marked for Burton E. Livingston. It is difficult to secure the attention of the executive committee for memoranda not in the permanent secretary's hands at least a day or two prior to the committee session when they are to be considered. Any proposals for the adoption of resolutions by the association should present the proposed resolutions in finished and carefully worded form.

The executive committee of the council will hold its first New York session in the permanent secretary's room at the Lincoln Hotel, on Thursday, December 27, at 10 o'clock. Other sessions will probably be held at 10 o'clock on Friday, Saturday, Monday and Tuesday mornings, in the council room, Earl Hall, Columbia University.

The council of the association will hold its first and main New York session in the library at the Lincoln Hotel (8th Avenue at 44th Street), on Thursday afternoon, December 27, at 2 o'clock. Other



council sessions are scheduled to occur from 9 to 10 o'clock on Friday, Saturday, Monday and Tuesday mornings, in the council room, Earl Hall, Columbia University.

The annual election of association officers will occur at the council session Saturday morning.

#### THE ACADEMY CONFERENCE

The Academy Conference is a special committee of the association, organized at the recent Nashville meeting, to consider the relations between the affiliated academies of science and the association and to facilitate cooperation among the many academies. Its membership consists of the council representatives of the affiliated academies and three representatives of the association as a whole. It plans to hold a session immediately following the first council session at New York, in the same room, and this session is to be followed by the complimentary academy dinner. Invitations for the academy dinner will be issued from the permanent secretary's office. The chairman of the academy conference is W. H. Alexander, U. S. Weather Bureau, Columbus, Ohio, and the secretary is Howard E. Enders, Purdue University, Lafayette, Indiana.

#### THE SCIENCE EXHIBITION

The annual exhibition of scientific apparatus, materials, methods, books, will be in University Hall, Columbia University. All the available space for exhibits by commercial firms has been engaged for many months and the New York exhibition will be, in its commercial aspect, the greatest and most comprehensive thus far held by the association. It is interesting to note that this exhibition will be housed in the same hall as was used twelve years ago for the first great exhibition undertaken by the association.

The scientific or research exhibits promise to be more numerous and interesting than in recent years. Additional space is available for these exhibits and investigators who have new methods or results to exhibit are invited to inform the permanent secretary immediately, describing the proposed exhibits and indicating the amount of space and the facilities that will be needed. The costs of the exhibition are borne by the commercial exhibitors and no charge is made for entering non-commercial exhibits.

The exhibition furnishes a ready means by which those who purchase laboratory apparatus and supplies and scientific books may examine the products of the best makers and publishers. It also makes it possible for research workers to become acquainted with new models of apparatus, new methods and new publications in their own and other fields. The exhibition has become a sort of social center, also, a place where

friends and acquaintances may meet and spend many agreeable and profitable periods during the week of the meeting. Such exhibitions are very effective in promoting the personal exchange of ideas, not only among scientists in the same field but between workers in widely different sciences.

As in recent years, the general exhibition will be in charge of Major H. S. Kimberly, exhibition manager, who has had the very valuable help and cooperation of the local committee on exhibition, the chairman of which is Harold A. Fales, of Columbia University.

Besides the general exhibition there will be, as usual, special exhibitions under the auspices of several of the associated societies. These will be primarily of interest to workers in the special fields.

In this connection mention should be made of the fact that the wonderful exhibits of the American Museum of Natural History will be available to those who attend this meeting. Besides the regular exhibits, some special exhibits of scientific nature are to be arranged there. As every scientist knows, the American Museum is a source of great interest and inspiration to all who visit it. President Osborn hopes that students of all branches of science and their friends will become well acquainted with the museum during convocation week.

#### GENERAL SESSIONS AND RECEPTIONS

Under the able and enthusiastic leadership of President Osborn, arrangements have been made by which the fifth New York meeting is to excel in the timeliness, interest, real importance and novelty of the addresses that are arranged for the general sessions. The evening general sessions and some of the others are to be held in the large auditorium of the American Museum of Natural History, and each evening session is to be followed by a reception in Education Hall, to those who are specially interested in the field of science represented by the speaker of the evening. The corresponding exhibition halls of the museum will be open throughout each evening. These New York evenings will be unusually enjoyable and profitable. They will be long and pleasantly remembered by all who attend.

The following notes represent the information thus far available concerning the general sessions, receptions, etc.

The meeting will open with a general reception at the American Museum on the evening of Thursday, December 27. The visiting scientists and friends of science will be welcomed by the officers of the association, the members of the local committees for this meeting, the representatives of the sixty educational and scientific institutions of the metropolis, and many

prominent New Yorkers. After brief addresses of welcome the main address of the evening will be given by Dr. Charles P. Berkey, of Columbia University, who will speak on "Recent Discoveries in the Geology of Mongolia." The exhibition halls of the museum will be open throughout the evening. Several new arrangements and new exhibition groups are being specially prepared for this meeting and are to be viewed this evening for the first time.

The second evening general session of the annual meeting is regularly devoted to an address given under the joint auspices of the Society of the Sigma Xi and the American Association. This year the address is the seventh annual Sigma Xi lecture. It will be given on Friday evening, by Dr. Arthur H. Compton, of the University of Chicago, recent winner of a Nobel prize. Dr. Compton's subject will be "What is Light?"

The general address of Saturday evening will be given by Dr. William Morton Wheeler, of Harvard University, on "New Tendencies in Biologic Theory."

On Monday evening, December 31, will be given the address of the retiring president of the association, Dr. Arthur A. Noyes, of the California Institute of Technology, who will speak on "The Story of the Elements."

At the general session on Tuesday evening Dr. Harlow Shapley, of Harvard University, will speak on "The Galaxies of Galaxies—New Developments in the Study of the Super-Organizations of the Milky Way."

Other general sessions are being arranged, with addresses by eminent men of science on topics of great and timely interest to all science workers and to intellectual people generally.

In the auditorium of the Casa Italiana, Columbia University, a general session under the joint auspices of the American Mathematical Society and the American Association, will be held on Friday afternoon, devoted to the sixth annual Josiah Willard Gibbs lecture of the American Mathematical Society. The lecture will be given by Professor G. H. Hardy, of the University of Oxford, on "An Introduction to the Theory of Numbers."

A general session in charge of the Committee of One Hundred on Scientific Research will present a symposium of invited papers on the problems of salary adequacy and needs of academic families. Are academic standards being lowered? Do able men and women find other lines of work more attractive than academic work? Have the living conditions of academic workers altered in recent years? Does the adequacy or inadequacy of financial income affect research effectiveness?

A late-afternoon general session of special interest to biologists and medical scientists will be devoted to a showing, by Dr. C. A. Kofoed, of the University of California, of the extraordinary Cinti film, which depicts in motion pictures the behavior of tissue cells *in vitro*.

Dr. Franz Boas, of Columbia University, will deliver a very important address on "Migrations of Asiatic Races and Cultures to North America."

#### SUNDAY FEATURES

It is hoped that the occurrence of a Sunday in the midst of convocation week this year will prove especially satisfactory to those who attend this meeting. President Osborn has asked that all who can possibly do so will remain throughout the week. Excursions are being planned to points of general and special interest: the New York Botanical Garden, the new Medical Center of Columbia University and the Presbyterian Hospital, the Boyce Thompson Institute for Plant Research, the Rockefeller Institute for Medical Research, the Cornell University Medical College, and others. It is expected that a number of the leading clergymen of the city will give special attention to nature and religion in their Sunday discourses, which will be of interest to many of the visiting men and women of science.

The New York Philharmonic Symphony Society will give a gift concert for visiting scientists and their friends, on Sunday afternoon, in Carnegie Hall, which accommodates over 2,700 people.

The trustees of the Metropolitan Museum of Art are to give a reception on Sunday evening to those who attend this meeting. A very exceptional opportunity will thus be furnished for viewing the rich and unique collections of the Metropolitan Museum.

#### SESSIONS OF THE SECTIONS AND SOCIETIES

The whole field of science will be exceptionally well represented in the many scientific sessions of the eighty-fifth meeting. There will be numerous joint sessions of two or more organizations, a large number of symposia of invited papers on timely topics, and many society dinners, luncheons and smokers. There will be many presidential addresses by leaders in their respective fields. For the information given in the following preliminary notes on the special programs the permanent secretary is greatly indebted to the secretaries of the sections and societies and to the local committee on arrangements. Final announcements about the scientific sessions will be contained, as usual, in the General Program of the meeting, which will be published under the editorship of Dr.



Sam F. Trelease, program editor. It will be available at the registration offices on Thursday morning, December 27, and each person who registers will receive a copy, along with the official badge for this meeting and the regular identification card. A copy of the General Program will be mailed free to any member of the association whose request for it is received before December 20 at the permanent secretary's Washington office.

The following very brief accounts are arranged under headings that correspond to the sections of the American Association.

**MATHEMATICS.**—The American Mathematical Society and the Mathematical Association of America will meet jointly with Section A on Friday afternoon, December 28. The retiring vice-president for Section A, Professor Dunham Jackson, of the University of Minnesota, will deliver an address at that time. A second address, entitled "The Heroic Age of Geometry," will be given by Professor J. L. Coolidge, of Harvard University, at the joint invitation of the American Mathematical Society and the Mathematical Association of America. The sixth annual Josiah Willard Gibbs lecture, under the auspices of the American Mathematical Society and the American Association, will be delivered at 4:30 on the same afternoon, by Professor G. H. Hardy, of Oxford University. The title of Professor Hardy's address will be "An Introduction to the Theory of Numbers." The American Mathematical Society will hold sessions on Thursday morning and afternoon and perhaps also on Saturday morning. On Friday morning there will be a single session with an invited address by Professor W. F. Osgood, of Harvard University, on "The Life and Work of Bôcher." On this occasion the third award of the Bôcher prize will be made. The Mathematical Association of America will hold sessions on Saturday morning and afternoon. Among other addresses, there will be one by Professor R. D. Carmichael, of the University of Illinois, on "A Simple Principle of Unification in the Elementary Theory of Numbers," and one by Professor Einar Hille, of Princeton University, on "The Development of Mathematics in Sweden." On Monday morning and afternoon there will be joint sessions of the mathematical organizations and the American Physical Society, at which the subject of wave mechanics will be discussed. An informal dinner for the mathematical group is scheduled for Friday evening.

**PHYSICS.**—Section B of the American Association will meet jointly with the American Physical Society and with the American Meteorological Society. The meetings will commence on Thursday and continue

until Monday. On Friday there will be a joint session of Sections B and D, the American Physical Society and the American Meteorological Society, when the address of the retiring vice-president for Section D, Dr. W. S. Adams, of Mount Wilson Observatory, will be given, on "A Large Telescope and its Possibilities." Also Dr. W. J. Humphreys, of the U. S. Weather Bureau, will speak on "Samples of Outdoor Physics." Dr. A. H. Compton, of the University of Chicago, will give an address at the general session on Friday evening, his subject being "What is Light?" There will be a lecture by Dr. C. E. K. Mees, of the Eastman Kodak Company, on "Color Photography," under the joint auspices of Sections C and B. On Friday evening there will be a dinner for the members of Section B and of the American Physical Society and their guests. On Monday, December 31, there will be a conference on "Wave Mechanics" arranged by the American Physical Society and the American Mathematical Society. The regular program of the American Physical Society for the reading of ten-minute papers will be held on Thursday, Friday and Saturday.

The American Meteorological Society will hold its regular meeting from Thursday to Saturday, in the Physics Laboratory, Columbia University. As this will be the tenth annual meeting, a broad program is planned. In the field of meteorology, the origins and effects of storms, weather forecasting, some phases of the history of meteorology, and aeronautical meteorology, will be discussed, and a number of new instruments are to be exhibited. In climatology there will be discussions of the hourly and seasonal distribution of precipitation and its variations, and the variations in the limits of sub-arctic winter climate in the eastern United States. The Meisinger Aerological Research Fund Prize of one hundred dollars may be awarded to the author of an outstanding contribution to aerology presented at this meeting.

**CHEMISTRY.**—Section C is planning some interesting sessions, mainly to be held jointly with other organizations. One session will be devoted to the presentation of contributions. On Thursday afternoon there will be a joint session with Section N, on "Recent Developments of the Chemistry of Naturally Occurring Remedial Agents, from Plant and Animal Sources." Professor Roger Adams, of the University of Illinois, retiring vice-president for Section C, will give the vice-presidential address at this session, on "Synthetic Organic Acids as Substitutes for Chaulmoogra Oil." Other speakers will be Drs. J. J. Abel, H. Jensen, K. K. Chen, E. J. Cohn and Oliver Kamm. At a joint session of Sections C

and M on Friday afternoon there will be a symposium on "The Chemistry of Metals," with papers by Drs. John Johnston, F. F. Lucas, F. N. Speller, E. H. Dix and H. F. Moore. There will be a joint session with Section K, on "Economics and Chemical Progress," at which Charles E. Herty, L. V. Redman, C. E. K. Mees and others will speak. There will be a Synthetic Luncheon on Saturday at one o'clock at the Hotel Commodore, held jointly by Sections C and N (Medical Sciences) and the American Institute, at which Colonel Marston T. Bogert, of Columbia University, will preside. Several of the outstanding synthetic substitutes for natural products will be discussed by eminent authorities. There will be a paper on synthetic organic chemistry as applied to medicinal products, by Professor Roger Adams, of the University of Illinois. Other topics to be dealt with are: fuel, rubber, nitrate, silk, leather, celluloid, food, shoe-buckles, fountain-pen holders, etc. Dr. Edwin E. Slosson, of Science Service, will speak on "Advances in Industry," and Dr. H. E. Howe will speak on "Advances Affecting Daily Life." Reservations for the Synthetic Luncheon may be made in advance by writing to L. W. Hutchins, director, The American Institute, Fisk Building, 57th Street and Broadway, New York City. The price is \$2.00 for members of the American Association and for members of the American Institute, \$2.50 for others. Luncheon tickets will be on sale at the main registration office, Columbia University, on Thursday and Friday. One of the important public lectures of the New York meeting will be under the auspices of Section C, on color photography, the Kodacolor Process, by Dr. C. E. K. Mees, of the Eastman Kodak Company.

**ASTRONOMY.**—The astronomical programs for this meeting, from Thursday to Saturday, are mainly in the hands of the American Astronomical Society, but the sessions will all be held jointly by the society and Section D. On Friday afternoon there will be a joint session of Sections D and B, the American Astronomical Society and the American Physical Society, under the joint chairmanship of Dr. J. S. Plaskett, chairman of Section D, and Dr. P. W. Bridgman, chairman of Section B. Dr. W. S. Adams, of Mount Wilson Observatory, retiring vice-president for Section D, will speak on "A Large Telescope and Its Possibilities." Dr. W. J. Humphreys, of the U. S. Weather Bureau, will speak on "Samples of Outdoor Physics." The retiring vice-presidential address of Dr. A. H. Compton, of the University of Chicago, retiring vice-president of Section B, is to be given at the general session Friday evening. His topic will be "What is Light?" and his address will be of very great interest to astronomers. The retir-

ing president of the American Astronomical Society will give the retiring presidential address for that society at the New York meeting, dealing with refraction. Dr. Harlow Shapley, of Harvard University, will give a public address at the general session Tuesday evening, on "The Galaxies of Galaxies—New Developments in the Study of the Super-Organizations of the Milky Way."

**GEOLOGY AND GEOGRAPHY.**—The New York sessions of Section E will be held in conjunction with those of the Geological Society of America and other affiliated societies, in the American Museum of Natural History. The sessions of the Geological Society will be held mostly on Thursday, Friday and Saturday, but the program is so crowded that joint sessions of Section E and the Geological Society have been scheduled for Wednesday. A geological session on Thursday afternoon will celebrate the "Centenary of the Glacial Theory," with a symposium on recent advances in this theory. Professor Frank B. Leverett, of the University of Michigan, vice-president for Section E, will give an address on "Glaciations of the Northern Hemisphere." Recent maps of the United States, of New York State and of China and the new world maps on the Lambert and tilted Mollweide projections will be displayed in Education Hall, American Museum. The address of the retiring vice-president for Section E, Professor Charles Schuchert, of Yale University, will be on "The Geological History of the Antillean Region." Dr. Bailey Willis, of Stanford University, president of the Geological Society of America, will give his presidential address on Wednesday, December 26, on "The Origin and Growth of Continents," and there will be a symposium on continental problems. The Paleontological Society of America, the Mineralogical Society of America and the Society of Economic Geologists are planning to hold sessions in conjunction with the other organizations of Section E, with their presidential addresses delivered in joint sessions where the entire geological group will be represented. The programs of the several societies will be arranged so as to cause as little interference as possible.

This New York meeting will mark the twenty-fifth anniversary of the Association of American Geographers, which will meet with the American Geographical Society, at 156th Street and Broadway. The annual dinner will be featured by the address of President Douglas W. Johnson, and by a program in honor of William Morris Davis, founder of the Association of Geographers. A field excursion followed by a round-table discussion of field problems will be an important feature. A series of brief addresses on the progress of geographical science during the quarter



century since the founding of the Association of Geographers is being planned. Preliminary offerings of titles promise a program of great variety and challenging interest.

The annual meeting of the National Council of Geography Teachers will be held at Teachers College, Columbia University, on Wednesday and Thursday. The program represents a great variety of subjects, from the use of geographical material and the function of geography in the schools and in higher education to the relation of geography to social studies, with discussions by some of the most eminent leaders in the field of geographic education. There will be preliminary reports of National Council committees on geography in the senior high school and in the elementary school. Among the many speakers may be mentioned: Drs. W. C. Bagley, Frank McMurry and J. Russell Smith, of Columbia University; Professor R. H. Whitbeck, of the University of Wisconsin; President W. W. Atwood, of Clark University; Dr. N. A. Bengtson, of the University of Nebraska; Dr. J. Paul Goode, of the University of Chicago; President Leonard O. Packard, of Boston; Professor Mark Jefferson, of Ypsilanti, Michigan; J. Stanley Brown, former president of the Northern Illinois State Teachers College; Miss Julia M. Shipman, of the University of Tennessee; Miss Isabelle K. Hart, of Oswego, New York, and Professor R. M. Brown, of Providence, R. I. The program will be of exceptional value to all geography teachers and to all who are interested in the fundamental social value of geography in education. The annual dinner for geographers will be held Thursday evening, with an address on "The Geography Curriculum of the Elementary School," by Dr. Frank McMurry.

**ZOOLOGICAL SCIENCES.**—The retiring vice-presidential address for Section F will be given by Dr. C. E. McClung, of the University of Pennsylvania, at a dinner for all zoologists, Friday evening. Dr. McClung's title will be "The Nature of Biological Papers and the Obligations of their Authors." The American Society of Zoologists will hold its twenty-sixth annual meeting on Thursday, Friday and Saturday. Many contributions are to be presented by demonstration or exhibit in the laboratory rather than by formal reading. This society will unite with the American Society of Naturalists in their symposium to be held on Saturday afternoon. A biologists' smoker is being planned. The general session Saturday evening will be of special interest to zoologists. Dr. William Morton Wheeler, of Harvard University, will deliver an invited address on "New Tendencies in Biologic Theory." Dr. C. A. Kofoed's presentation of the Canti motion pictures, at an afternoon general session

at Columbia University, will also interest the zoological group. It depicts in a very remarkable manner the behavior of living tissue cells *in vitro* and it has been greatly praised.

The American Society of Parasitologists will hold its fourth annual meeting from December 27 to January 1. A special feature of this meeting will be an exhibit on parasites and parasitic diseases by the society, in the general exhibition of the American Association. The address of the retiring president, Dr. C. A. Kofoed, of the University of California, will be on "The Protozoa of the Human Mouth." As has been customary in the last few years, a joint session will be held with the American Society of Zoologists. There will also be two sessions of invited papers representing the results of important researches which are being carried on by members of the society. An especially interesting series of programs of contributed papers, many of them presented partly or wholly by demonstration, is expected.

The Entomological Society of America will hold morning and afternoon sessions on Thursday and Friday under the presidency of Professor E. O. Essig, of the University of California. A symposium on "Present Trend in Systematic Entomology" will be held on Thursday afternoon. The annual address of the society will be delivered on Friday evening by Dr. R. N. Chapman, of the University of Minnesota. There will also be exhibits of specimens and equipment.

The American Association of Economic Entomologists will hold its forty-first annual meeting from Thursday to Monday. The Thursday sessions will be devoted to the Section of Plant Quarantine and Inspection, in the morning, and to the Extension Entomologists and the Insect Pest Survey, in the late afternoon. On Friday will occur the opening business session of the General Association and the address of the president, W. B. Herms, of the University of California. On Saturday the sessions of the General Association will be continued and the Section of Apiculture will also meet separately in the morning. The entomologists' dinner, which is an important feature at this meeting will occur Saturday evening, and a large attendance of all kinds of entomologists is expected. The meeting of the General Association will be continued on Monday and will conclude with a final business session. The programs will include numerous papers on natural and artificial methods for the control of insect pests of many kinds. There will be exhibits of equipment, photographs and drawings showing insect injury, illustrations of life histories and methods for the control of various pests.

**BOTANICAL SCIENCES.**—On Friday afternoon Section G will hold a joint session with the associated botanical societies. Dr. William Crocker, of the Boyce Thompson Institute for Plant Research, retiring vice-president for Section G, will deliver an address on "Germination Studies in Relation to Ecology and to Practice." This address will be followed by three invitation papers: "Cryptic-Types in *Datura* Due to Chromosomal Interchange and their Geographical Distribution," by Dr. Albert F. Blakeslee, of the Station for Experimental Evolution; "Heterothallism in Rust Fungi," by Dr. J. H. Craigie, of the Dominion Rust Research Laboratory, Winnipeg; and "Recent Studies of Curly-Top," by Professor M. B. McKay, of the Oregon State Agricultural College.

The Botanical Society of America will hold its annual meeting from December 27 to 29, under the presidency of Dr. A. H. R. Buller, of the University of Manitoba. Programs are being arranged for the five sections of the society and there will be joint sessions with Section G of the American Association, the American Phytopathological Society, the Ecological Society of America and the American Society of Naturalists. The General Section of the Botanical Society will probably hold a round-table discussion on the teaching of botany. The annual dinner for all botanists will be held Friday evening. At this time it is hoped that Dr. L. H. Bailey, president of the Botanical Society for 1926, will deliver the retiring presidential address which he was unable to present a year ago.

The American Phytopathological Society will hold its meetings from December 28 to 31, inclusive. This is the twentieth anniversary meeting of the society and it is planned to celebrate the occasion and to make the meeting the best and largest ever held. One of the unusual features of the meeting will be a discussion of domestic and foreign plant quarantines in relation to plant diseases. Three short papers and the report of the committee on foreign plant disease and pest investigations will be followed by general discussion. Another attractive addition to the program, made possible by reason of the meeting being in New York, is an excursion to railway terminals, docks, wholesale markets and storage houses to see how incoming fruits and vegetables are handled. A very interesting program is being planned for the phytopathologists' dinner Saturday evening and on the following evening there will be an innovation in the form of a supper and smoker for plant pathologists.

The fifth annual meeting of the American Society of Plant Physiologists, which will be held on Saturday, Monday and Tuesday, will be of unusual interest. At the annual dinner for all plant physiologists an-

nouncement will be made of the first Stephen Hales award. This is a prize recently established by the society, based on an endowment raised by subscription. It is to be awarded at intervals of two or three years. Two joint sessions are to be held with the Physiological Section of the Botanical Society of America, one devoted to a symposium on "Cell Physiology" and the other to a symposium on "Radiant Energy Relations of Plants." Two sessions are to be devoted to the presentation of contributions.

**BIOLOGICAL PROGRAMS RELATED TO BOTH ZOOLOGY AND BOTANY.**—The annual meeting of the American Society of Naturalists will include a short business session and a symposium, at the American Museum of Natural History, Saturday afternoon. The subject of the symposium is: "The Neuromotor System." Different phases of this subject will be discussed by G. N. Calkins, of Columbia University; Charles V. Taylor, of the University of California; W. Seifriz, of the University of Pennsylvania, and G. H. Parker, of Harvard University. On Saturday evening will be held the annual banquet of the society, at which the address of the retiring president, Dr. H. H. Donaldson, of the Wistar Institute, will be given.

The general session Saturday evening will attract all biologists. On that occasion Dr. William Morton Wheeler, of Harvard University, will deliver an invited address on "New Tendencies in Biologic Theory."

The Ecological Society of America will hold its fourteenth annual meeting December 27 to 31. In addition to the sessions for the reading of contributions, joint sessions will be held with the Botanical Society of America and the American Society of Zoologists. There will also be a symposium, the subject of which has not yet been selected, in charge of the president of the society. There will be an informal dinner for all who are interested in ecology.

The American Microscopical Society will hold its forty-seventh annual business meeting on the afternoon of Saturday, December 29.

The Phi Sigma Biological Research Society will hold its biennial convention on Wednesday and Thursday. One day will be devoted to a scientific program, which will be open not only to active members of the society but to junior research workers from any institution in the United States. A prize is to be awarded for a meritorious report of original research presented by a junior worker who is not a member of the society. A dinner for members and guests will occur on Wednesday evening.

The Genetics Sections of the American Society of Zoologists and the Botanical Society of America will hold regular sessions for the reading of papers on Thursday, Friday and Saturday mornings. There



will be a short business meeting at the end of the Friday morning session, for the election of officers and to receive the report of a committee appointed to consider "what organization is for the best interests of genetics in America." On Thursday afternoon the Genetics Sections will join with the Geneticists Interested in Agriculture, in a symposium on "Inheritance of Disease Resistance in Plants and Animals." On Friday and Saturday afternoons there will be informal laboratory demonstrations and exhibits.

The American Nature-Study Society and the American Nature Association will hold their annual meeting December 27 to 31, at the American Museum. On Thursday morning there will be an automobile excursion to visit the nature rooms and exhibits in New York schools. At the opening session on Thursday afternoon the general topics to be discussed will be: "The Nature Program, What shall it be and What shall its Place be in the Curriculum?"; "The State Nature Program" and "The City Nature Program." Topics for the Friday session will be "Training for Nature Service" and "Present-day Trends in Nature Education." Nature activities of volunteer organizations and nature training schools will be discussed on Saturday. An automobile sight-seeing trip will be made on Sunday to places of special interest to nature teachers. On Monday the contributions made by allied organizations to nature education will be considered. Representatives of the School Nature League, the Museum Association, the National Congress of Parents and Teachers, the American Forestry Association, the Izaak Walton League, the Children's Laboratories, the School Garden Association, the Audubon Society, Wild Flower Conservation Society, the Botanical Gardens and the Garden Clubs will take part. There will be exhibits from the Garden Clubs, the Wild Flower Conservation Society, the Audubon Society and others.

**ANTHROPOLOGY.**—Sessions of Section H will be held at the American Museum of Natural History, on December 28, 29 and 30. The program provides for discussion of anthropological technique and procedures as well as for the presentation of significant new data. The section will hold several joint sessions with the American Anthropological Association and the American Folk-Lore Society. The anthropologists' dinner will be on December 29, at which time Professor R. J. Terry will deliver his retiring vice-presidential address, on "The American Negro."

The American Anthropological Association will hold its sessions on Thursday, Friday, and Saturday. There will be a joint session with the Linguistic Society of America and one with the American Folk-Lore Society.

The forty-ninth annual meeting of the Archeological Institute of America will be held, at the invitation of the Metropolitan Museum of Art, on Thursday, Friday and Saturday, in conjunction with the American Philological Association and the College Art Association. The first session of the institute will be held Thursday afternoon. Thursday evening there will be a joint session of the institute with the Philological Association, followed by a smoker. On Friday evening there will be a dinner of the Archeological Institute, the Philological Association, the College Art Association and the Linguistic Society.

**PSYCHOLOGY.**—The address of the retiring vice-president for Section I, Dr. Knight Dunlap, of the Johns Hopkins University, will be on "The Outlook for Psychology." The meeting of the American Psychological Association will be held on Thursday, Friday and Saturday, in Schermerhorn Hall, Columbia University. The morning and afternoon of the first day will be given to papers on general and experimental psychology; the second day, largely to general and clinical psychology, and the third day, to clinical and educational psychology. The annual business meeting will be held on Thursday evening. The annual dinner will be held at the Hotel Pennsylvania on Friday evening, followed by the presidential address, by Professor Edwin G. Boring, of Harvard University. There will be a number of round-table conferences on a variety of topics.

**SOCIAL AND ECONOMIC SCIENCES.**—Section K will join with Section C (Chemistry) in a joint session on some economic aspects of chemical industry. A program of contributions in statistics, economics and social science is being planned. Those who desire to take part should at once send their manuscripts or abstracts to Dr. Edwin B. Wilson, Harvard University, School of Public Health, Van Dyke Street, Boston, Mass. The retiring vice-president for Section K is Dr. W. S. Leathers, of Vanderbilt University.

**HISTORICAL, PHILOLOGICAL AND LINGUISTIC SCIENCES.**—The field of Section L will be represented at this New York meeting by the History of Science Society and the Linguistic Society of America. The American Philological Association, not yet associated with the American Association for the Advancement of Science, will be meeting in New York at the same time, in conjunction with the Archeological Institute and the Linguistic Society. This meeting will consequently be exceptional in its interest for workers in these fields.

The History of Science Society, in cooperation with the New York Academy of Medicine and Section N of the American Association, will present a program

on Friday and Saturday afternoons, at the New York Academy of Medicine, Fifth Avenue and 103rd Street. There will be an interesting series of addresses on the history of medicine and civilization, by eminent American and European scholars. Among the topics on this program are: "The History of Medicine and its Relation to Magic," "The Relation of Medicine to Creative Literature," "The Rôle of Medicine in Medieval Thought," "The Relation of Medicine to the Art of Printing."

The Linguistic Society of America will hold its fifth annual meeting on Wednesday and Thursday. Its meeting is to be in special conjunction with the Anthropological Association and the Psychological Association and with the Philological Association and the Archeological Institute. The sessions of Wednesday afternoon and evening and Thursday morning will be held at the Columbia School of Mines, Broadway, above 116th Street; the session of Thursday afternoon will be held jointly with the American Philological Association, at the Metropolitan Museum of Art.

A special committee of the American Association for the Advancement of Science (Dr. Edward Sapir, of the University of Chicago, *chairman*) is studying the problem of the relation of linguistics to the physical and natural sciences and to the American Association and it is expected that Dr. Sapir will present at this meeting an address on "The Status of Linguistics as a Science."

**ENGINEERING.**—Section M will hold sessions on Friday and Saturday. On Friday there will be a joint session of Sections C and M with a symposium on the "Chemistry of Metals." There will be three sessions on December 29. At the morning session the address of the retiring vice-president, Dr. A. N. Talbot, of the University of Illinois, will be given, and there will be a discussion of engineering education, with particular reference to preparation for research. In the afternoon there will be a symposium on "The Organization of Scientific Research in Industry," arranged by the local committee. At the dinner session there will be a number of addresses on "Contributions of Science to Engineering." During the following week there will be a reception at the Museum of Peaceful Arts, and on this or another occasion the Baron Shiba airplane-research motion pictures will be shown.

**MEDICAL SCIENCES.**—Section N plans to have sessions on Friday and Saturday afternoons, jointly with the History of Science Society and the New York Academy of Medicine, the general topic for these two sessions being "The History of the Various Sciences as Related to Medicine." It is planned to use the material brought forth by this symposium for a published history of medicine, from a somewhat novel

angle. On Monday a symposium will be held in co-operation with the Life Extension Institute, on the broad problem of variations in life cycles of living organisms, with a discussion of the possibilities of influencing these cycles in ways beneficial to man. A joint meeting is being planned with Section C (Chemistry) on the chemistry of plant and animal derivatives of special interest in medicine. At a late-afternoon general session Dr. C. A. Kofoed, of the University of California, will show the Cinti motion pictures of living cells, which are remarkably fine and valuable. These will be of great interest to many workers in medical science.

**AGRICULTURE.**—Section O will hold a joint meeting with the New England Section of the American Society of Agronomy on Friday, with a symposium on "Pasture Management." The invitation papers will cover recent experiments on permanent and temporary pastures, the Hohenheim system, the use of fertilizers and lime, types of grasses and clovers best adapted to pastures, etc. Both morning and afternoon sessions will be held. A joint banquet will occur in the evening, at which time Dean L. E. Call, of the Kansas State Agricultural College, will deliver the address of the retiring vice-president for Section O.

The American Society for Horticultural Science will hold, from Thursday to Saturday, the twenty-fifth anniversary meeting of the society. This meeting will be unusually attractive. Arrangements have been made so that the sessions of the several sections of the society will be under the same roof, facilitating the easy communication that members of the society desire. The program, as in former years, will deal largely with the nutritional relations of economic plants, pollination, sterility, fruit-setting, and biometric methods as applied to horticultural crops. The dinner of the society will occur on Friday evening. Professor C. P. Close, extension horticulturist of the U. S. Department of Agriculture, will give the presidential address.

The Potato Association of America will consider, at its annual meeting, how to emphasize the importance of the potato as a food. Eminent physicians and dietitians will take part in this discussion. The storing, grading and marketing of potatoes will be discussed, with particular reference to the overproduction problem of this year, with papers by specialists in marketing. A study will be made of the potato markets of New York. Results of recent studies on disease control and insect control and on seed selection and cultural practices will be given by investigators from twenty states of the United States and the Dominion of Canada.



This year's meeting of the Association of Official Seed Analysts promises to be one of the best the association has ever held. Dr. William Crocker, of the Boyce Thompson Institute for Plant Research, will give an invitation paper on "The Physiology of Seed Germination." Mr. G. N. Collins, of the U. S. Bureau of Plant Industry, will give one on "The Nature and Interpretation of the Variations in Seed Testing." Reports on the recent Rome meeting of the International Seed Testing Association will be presented by Professor M. T. Munn, of the New York Seed Laboratory, and Messrs. Toole and Brown, of the Seed Laboratory of the U. S. Department of Agriculture.

**EDUCATION.**—Seven sessions of Section Q are planned for Thursday, Friday and Saturday, at Teachers College, Columbia University. The topics to be discussed are: (1) "The Mathematical Treatment of Data on Education Problems," (2) "Recent Improvements in Instruments for Measurement in Education Problems," (3) "General Experimental Studies," (4) "Experimental Studies in College and University Education," (5) "Experimental Studies in City School Systems," and (6) "Unclassified Experimental Studies." A joint dinner of Section Q with Section I (Psychology) will be the occasion for the presentation of the addresses of the retiring vice-presidents for these sections, Dr. Knight Dunlap (Section I) and Dr. Arthur I. Gates (Section Q).

**PROGRAMS RELATED TO SCIENCE IN GENERAL.**—The American Association of University Professors will consider some very important questions at its annual meeting this year. Among the topics before the meeting will be: "Methods of Selection and Promotion of College Teachers and the Probability of Establishing a Non-Commercial Placement Service for Them"; "Activities of Local Chapters"; "Recent Problems of Academic Freedom and Tenure and of University Ethics"; "The Economic Condition of the Profession," a matter of perennial interest, about which it seems difficult to accomplish very much through committees.

The Sigma Delta Epsilon Women's Graduate Scientific Fraternity will hold a breakfast meeting, to which all women in science are invited.

#### FURTHER ANNOUNCEMENTS AND REPORTS OF THE NEW YORK MEETING

Later announcements about the approaching meeting may be found in *SCIENCE* and full information will be contained in the General Program, which will be available in the registration offices at New York on Thursday, December 27, and thereafter. A copy of the program will be supplied free to each person who registers at the meeting and additional copies

will be on sale at the registration offices, at seventy-five cents each. Paid-up members of the American Association who do not attend the meeting may each secure a free copy of the program by requesting it from the permanent secretary's Washington office, in the Smithsonian Institution Building. Requests should arrive before December 22. Others may secure copies of the program if they remit the price of seventy-five cents each.

It is planned that the general reports of the meeting will appear in two parts, as special issues of *SCIENCE* for January 25 and February 1. The first part is to contain accounts of the general features of the meeting and the business transacted by the council of the American Association. The second part is to be devoted to a full series of readable reports on the section and society programs, the material for these being supplied by the secretaries of those organizations. Paid-up members of the American Association who do not receive *SCIENCE* regularly may secure free copies of the two special issues by requesting them from the permanent secretary's Washington office. Free copies of special issues will also be supplied, if requested in writing, to all who have registered at the New York meeting, whether they are members or not. Others may secure them by remitting fifty cents.

Free copies of this preliminary announcement may be secured, on request, from the Washington office or at the registration offices at New York, as long as the supply lasts.

## SCIENTIFIC EVENTS

### FORESTRY IN SWEDEN

THE Stockholm correspondent of the *Herald Tribune* reports that a hundred years of systematic forestry culture has been celebrated by the Swedish College of Forestry, located in the outskirts of Stockholm. Approximately one half of Sweden's exports are derived from forest products, whether in the form of lumber, wood pulp, newsprint paper or by-products such as charcoal, tar, wood alcohol or other kinds of chemicals.

At this centennial celebration many forestry experts from abroad were present, including Professor R. P. Holdsworth, of Yale; Professor G. A. Schenck, of the University of Montana; Professor M. Dawson, of Cambridge; Professor E. P. Stebbing, of Edinburgh, as well as specialists from Germany, Norway, Finland, Hungary, Esthonia, France, Poland, Latvia, Czechoslovakia and Russia.

The elaborate entertainment program included exercises at the Forestry College itself, a formal meet-

ing at the new Stockholm Concert House, presided over by ex-Admiral Arvid Lindman, head of the new Swedish Conservative Cabinet and chairman of the college board of directors; a banquet at the City Hall and a gala performance at the Royal Opera. These gatherings were attended by King Gustaf, Crown Prince Gustavus Adolphus and other members of the royal family, many Cabinet ministers and other government officials.

The Swedish College of Forestry, which has played an important rôle in the preservation of the national forests, was founded in 1828 by Israel Adolf af Stroem, called the Father of Swedish Reforestation. Ancient Swedish history is, however, replete with proofs of the care and interest that have always been lavished upon this form of natural wealth.

Royal letters dated 1284 and 1525 prohibited the cutting of certain trees, imposing severe penalties for violation. Another letter of 1647 commanded that for each felled oak or beech two other trees of the same kind should be planted. These orders were motivated by the need of timber for house and ship-building and because the forests served as shelter for valuable fur-bearing animals.

To-day the College of Forestry graduates annually a number of efficient and highly trained foresters who have received a thoroughly theoretical and practical education. The studies at the school in Stockholm, covering two and a half years, are preceded by a one-year course in the forests of the Omberg Mountain, in the central province of Ostergothland, or in Dalecarlia. Here the pupils are instructed in everything connected with trees and wild animals, such as timber cutting, drainage, stump pulling, charcoal burning, reforestation, tree counting, hunting and fishing. Sawmills, wood-pulp plants and timber floating are also studied.

These activities and other measures taken by the Swedish government to preserve the timber supply were described at the celebration. Particular stress was placed upon the national census of forests, a gigantic task now nearing completion, which has already given evidence that Sweden's forest reserves are considerably greater than previously had been assumed. The annual growth has been found to be greater than the cutting, so that at the present rate of exploitation Sweden's forest reserves will last indefinitely.

#### EXPEDITIONS OF THE FIELD MUSEUM OF NATURAL HISTORY

THE Field Museum of Natural History, Chicago, has sent out three zoological expeditions during the past few weeks.

The Harold White-John Coats Abyssinian Expedition, sponsored and led jointly by Harold A. White,

of New York City, and John Coats, of Ayrshire, Scotland, has gone to Abyssinia to collect mammals and birds, a special objective being specimens of the reticulated giraffe for use in a group exhibit. C. J. Albrecht, of the museum staff; George Carey, of Baltimore, Md., and several other men are members of the expedition.

On November 10 the first contingent of the William V. Kelley-Roosevelts Expedition to Eastern Asia departed for a year or more of zoological collecting and exploration of little-known regions in French Indo-China, and territory northwest of Indo-China along the gorges of the Mekong River and abutting on the borders of Burma, Siam and Yunnan. William V. Kelley, a business man of Chicago, is sponsor of the expedition. The leaders are Colonel Theodore Roosevelt and Kermit Roosevelt. Suydam Cutting, of New York City, and Herbert Stevens are among those accompanying the Roosevelts. A second contingent, led by Harold Coolidge, Jr., of Boston, will sail on December 22. Other members of the second contingent are Dr. Josselyn Van Tyne, assistant curator of birds of the museum of zoology of the University of Michigan; Dr. Ralph E. Wheeler, of Cambridge, Massachusetts, and Russell W. Hendee, of Brooklyn, New York. After each division has accomplished its individual objectives, the two parties will join next June for further intensive work together.

The Crane Pacific Expedition of Field Museum, led by its sponsor, Cornelius Crane, of Chicago and Ipswich, Massachusetts, sailed on November 16, on Mr. Crane's yacht, *The Illyria*, to circumnavigate the Pacific Ocean, making zoological collections and investigations at many of the principal island groups of the south and western Pacific and at many places in Asia. The expedition's operations are expected to take about one year. Karl P. Schmidt, assistant curator of reptiles, is leader of the scientific section of the party. Among other members of the expedition are Dr. Albert W. Herre, curator of the museum of zoology at Stanford University; Dr. W. L. Moss, of the Harvard Medical School; a number of technical assistants, and several friends of Mr. Crane's.

#### SCIENTIFIC RESEARCH IN GOVERNMENT LABORATORIES

IN the Annual Report of the Secretary of Commerce Dr. Ray N. Hudson, assistant director of the Bureau of Standards, writes:

That far-sighted leaders of industry recognized the dependence of their progress upon advances in science is evidenced by the increasing call upon government laboratories for cooperation in research.



Some 200 organizations have working relations with the Bureau of Standards, and nearly 1,000 industrial experts advise with it in its research programs.

The public values in this cooperation are reflected in estimated annual savings ranging from \$1,000,000 for the perfection and adoption of the Stoddard solvent formula to \$50,000,000 to the dental profession and the public, resulting from the improved technique for making gold inlays, whereby it is assured that the inlay will have form and size identical with the cavity.

Recently the bureau, which by law is the research arm of the department's aeronautic work, established the first radiobeacon for the first national airway. A lane of radio is in effect fixed in the air to a given destination. An indicator tells the pilot at all times whether he is on or off course, in what direction and how much.

Development of a reliable radio-communication system between the plane and the ground, and further perfection of some forty instruments, each telling some factor essential to perfect flight, are other achievements in this field.

The fixing of radio-frequency measurements with unprecedented precision through quartz blocks kept at constant temperature mark progress toward perfect radio reception. This advance makes possible the measured control of frequencies to within 1 or 2 parts in 100,000.

Through refined apparatus and method the properties of steam are being redetermined as the basis of a new era in the utilization of steam. Early results promise a new order of precision in steam research and engineering.

Electrical units may now be defined and realized in mechanical units more exactly than otherwise, thus enabling the basing of such electrical units upon their original definitions instead of upon values adopted as expedients. Fundamental researches in this field are giving all electrical measurements a simpler and more exact basis.

Measurement as a universal means of research and standards as the basis of applying service to industry are making notable headway. Shop and purchase standards are increasingly being based on measured data as to the needs to be met and less on opinion.

#### BEQUESTS OF THE LATE PAYNE WHITNEY

THE appraisal of the estate of the late Payne Whitney was made public on November 22. The value of the whole amounts to \$194,328,514.

Among the public beneficiaries, New York Hospital, of which Mr. Whitney was vice-president, receives the largest gift of the total of nearly \$60,000,000 left to charities, institutions and organizations. In the last two years before his death Mr. Whitney gave the hospital \$1,367,056, while in his will he left thirty-three parts of the residuary estate, which had been divided into 300 parts, the bequest amounting to \$18,632,176. The list of debts included \$135,920 under an agreement made with the hospital in 1925 and \$97,500 under a promise in 1927 to build a residence at Bloomingdale Hospital for the general psychiatric director.

New York Hospital will benefit further under the clause of the will giving forty-six parts of the residue, or \$25,972,134, to the trustees, the elder and the junior Ledyard and Edward W. Sheldon, president of the United States Trust Company, to apply the principal or income "for the furtherance or development of such charitable, benevolent, hospital, infirmary, public educational, scientific, literary, library or research purposes as said trustees shall in their absolute discretion determine to be in the public interest." The testator, however, suggested that "it would be agreeable" to him if the trustees used the fund "for the aid or development of such of the above enumerated purposes as I have been interested in during my lifetime."

The trustees submitted to Deputy Commissioner Stephenson a statement of their decision as to this fund, in which they said they had "carefully considered" the best means of disposing of the forty-six parts in order to carry out Mr. Whitney's intentions as expressed in his will. They were close friends of the testator, they said, and were "much impressed" by his suggestion that the fund should be used to aid the organizations in which he was interested during his lifetime. Because Mr. Whitney died "suddenly and unexpectedly" only a short time after his will was made, the trustees said they believed that before his death he "had not become interested in any institutions other than those to which he specifically gave some of the shares of the residue."

"After full consideration of the matter," said the trustees, "we have decided that the capital shall be distributed among the New York Hospital, Cornell University, for the maintenance and support of Cornell Medical College; the New York Public Library, Astor, Lenox and Tilden Foundations; the Groton School, Yale University and the Nassau Hospital."

The shares left under the will to these organizations, other than New York Hospital, were appraised as follows: New York Public Library, \$6,210,725; Cornell University, \$2,823,657; Yale University, \$2,823,657; Groton School, \$1,129,272 and Nassau Hospital, which got only one share, \$564,611.

The trustees said in their statement that they would determine later the manner in which the capital of the \$25,972,124 fund should be distributed "among some or all of the institutions."

#### SCIENTIFIC NOTES AND NEWS

THE National Academy of Sciences has awarded its Daniel Giraud Elliott medal for the "most meritorious work in zoology or paleontology" to Professor Edmund B. Wilson, of Columbia University, for the third edition of his "The Cell in Development and Heredity." The Comstock prize for the most impor-

tant research in electricity, magnetism and radiant energy during the past five years was awarded to Dr. Clinton Joseph Davisson, of the Bell Telephone Laboratories. The awards were presented at the dinner of the academy held on November 20 in connection with the Schenectady meeting, the address of presentation in the case of the Elliott medal being made by Professor Edwin G. Conklin, of Princeton University, and in the case of the Comstock award by Dr. John J. Carty, vice-president of the American Telephone and Telegraph Company.

PRESENTATION of the gold medal of the Holland Society was made in New York City on November 23 to Dr. R. A. Millikan, of the California Institute at Pasadena. The medal was given for his "achievements in the field of physical science." Dr. Fenton B. Turck made the presentation.

A NATIONAL monument is planned by the National Aeronautical Association to be erected at Dayton, Ohio, in honor of Orville and Wilbur Wright.

PROFESSOR CARL L. A. SCHMIDT, chairman of the department of biochemistry of the University of California, has received a research award of \$750 from the National Society of Sigma Xi.

DR. HERBERT L. WHITMORE, research engineer of the Bureau of Standards, has been awarded the 1927 James Turner Morehead medal by the Acetylene Association, the presentation of which was made in Chicago.

DR. ROSS AIKEN GORTNER, professor of agricultural biochemistry in the University of Minnesota, has been elected an honorary member of the Des Moines Academy of Medicine in recognition of his contributions to the chemistry of vital phenomena.

ON his twenty-fifth anniversary as dean of the college of engineering of the University of Wisconsin, a banquet will be held in honor of Professor Frederick E. Turneaure. Professor E. R. Maurer, head of the department of mechanics, will preside at the dinner which will be given on December 11, and Professor D. W. Mead, head of the department of hydraulic engineering, will be the principal speaker.

THE governor-elect of New York State, Mr. Franklin D. Roosevelt, called a non-partisan conference on November 24 to consolidate suggestions for handling the farm problem in the state. The conference was attended by about twenty farm organization leaders, agricultural authorities and the heads of several state departments, whose work is connected one way or another with farm relief. Members of the conference included Dean A. R. Mann, of the College of Agriculture; Dr. C. E. Ladd, director of extension of the

College of Agriculture, and Dr. G. F. Warren, head of the department of agricultural economics of Cornell University; Dr. Mathias S. Nicoll, Jr., state commissioner of health; Dr. F. P. Graves, state commissioner of education, Dr. U. P. Hedrick, director of the Geneva Experiment Station and Dean Franklin Moon, of the State School of Forestry, Syracuse.

DEAN ANSON MARSTON, of the Iowa State College, was elected president of the Association of Land-Grant Colleges, at the concluding session of the Washington meeting held on November 23.

EFFINGHAM B. MORRIS has been elected president of the Academy of Natural Sciences of Philadelphia. He succeeds Dr. T. Chalkley Palmer. The election of Thomas S. Gates to the board of directors is also announced.

NELSON ANTRIM CRAWFORD, director of information in the Department of Agriculture, has resigned and will be succeeded by M. S. Eisenhower, administrative assistant and secretary to the Secretary of Agriculture.

LIEUTENANT COLONEL HAMERTON, who was for some time assistant director of pathology at the British War Office and who was a member of the Sleeping Sickness Commission appointed by the Royal Society and worked in Uganda and Nyasaland with Sir David Bruce in 1908-10, also serving in Iraq and at Aden, has been appointed to succeed Dr. H. H. Scott as pathologist to the Zoological Society, London.

ROY CHAPMAN ANDREWS arrived in London on his return from his explorations in the Gobi Desert on November 21, sailing for the United States on November 23.

DR. W. B. FORD, professor of mathematics in the University of Michigan, has been granted leave of absence for the current academic year and will travel in Europe. Representing the Carnegie Endowment for International Peace, he will lecture at the Universities of Leiden and Utrecht, the University of Brussels, the Universities of Lille and Grenoble and the University of Pisa.

DR. HOMER L. DODGE, dean of the graduate school and professor of physics at the University of Oklahoma, will spend his sabbatical leave of absence in England. He and his family sail on December 13 for London, where they will reside for several months. Dr. Dodge will study educational conditions in England, with particular reference to the adaptation of graduate study to social and economic needs.

PROFESSOR JOSEPH VALASEK, of the University of Minnesota, is spending his sabbatical year in the study of X-rays with Professor Siegbahn at Upsala, Sweden.



DEAN DEXTER S. KIMBALL, of Cornell University, gave the principal address on the occasion of the hundredth anniversary of the Ohio Mechanics Institute, which was celebrated on November 23 and 24.

ON December 17 and 18 there will be held at the Gayley Chemical and Metallurgical Laboratories of Lafayette College, Easton, Pennsylvania, the third "Plasticity Symposium," with ten papers on various problems of flow. The speakers are expected to include Dr. Albert E. Dunstan, of London, and Dr. Markus Reiner, of Jerusalem.

DR. JOSEPH S. ILLICK, state forester of Pennsylvania, represented the commonwealth at the fourth New England Forestry Conference held at Portland, Maine, on November 15 and 16. Dr. Illick spoke on the "Recreational Opportunities of the State Forests of Pennsylvania."

AT the tercentenary celebration of the birth of Marcello Malpighi, held on October 19 at the Academy of Medicine of Cleveland, Professor Giuseppe Franchini, director of the institute of tropical medicine of the University of Bologna, spoke on "The Life and Work of Marcello Malpighi." Another feature of the celebration was an exhibit of Malpighi's discoveries by the department of anatomy of Western Reserve University School of Medicine, including the alveoli of the lung, Malpighian tufts in the kidney, the Malpighian bodies in the spleen, the pigment layer of the skin and the capillary circulation. Professor Franchini exhibited early books, medals and autographs.

A MEMORIAL meeting for Captain Roald Amundsen, Arctic and Antarctic explorer, will be held under the auspices of the Geographic Society of Chicago in Orchestra Hall, December 14, at 8:00 P. M. Addresses will be made by President Charles Hull Ewing, Dr. Horace Bridges and others. December 14, the anniversary of Amundsen's discovery of the South Pole, has been named the official day of mourning and memorial by the Norwegian government.

AT the inauguration of Dr. Harvey Nathaniel Davis, former professor of mechanical engineering at Harvard University, as third president of the Stevens Institute of Technology at Hoboken, New Jersey, a bronze tablet was unveiled of Dr. Alexander Crombie Humphreys, second president of the institute, who died last year.

DR. FRANK C. WAGNER, president of the Rose Polytechnic Institute, was killed on November 21 when his automobile was struck by an Indianapolis train. Dr. Wagner had been a member of the engineering department since 1896 and became president of the institute in 1923.

## UNIVERSITY AND EDUCATIONAL NOTES

THE Agricultural Engineering Building at the University of California's Branch of the College of Agriculture at Davis, erected at a cost of \$140,000, was dedicated on November 12.

HARRIMAN DORMITORY, the fourth structure to be erected in Wesleyan University's \$1,250,000 building program on the Johnston quadrangle, was recently dedicated.

EDWARD F. ALBEE, president of Keith-Albee-Orpheum, has given \$100,000 towards the \$2,500,000 endowment sought by St. Stephen's College to enable it to develop adequately as a unit of Columbia University.

*Nature* reports that the new buildings for the departments of physics and chemistry of University College, Cardiff, Wales, have been completed and the transference of classes and equipment to the new quarters is practically accomplished. Dr. Norman Thomas has been appointed professor of engineering in succession to Professor A. J. Sutton Pippard (resigned). In the Welsh National School of Medicine, Professor J. H. Dible has been appointed professor of pathology and bacteriology in succession to Professor E. H. Kettle (resigned).

DR. GEORGE RAYMOND GAGE, who has lately been associate professor of botany at De Pauw University, is now at Vanderbilt University as associate professor of biology.

FRANCIS M. DAWSON, for the last six years professor of hydraulics at the University of Kansas, has resigned to accept a professorship of hydraulics at the University of Wisconsin.

## DISCUSSION

### THE INTERNATIONAL UNION OF BIOLOGICAL SCIENCES

As president of the International Union of Biological Sciences I should like to suggest some considerations about this union in order to inform those countries which up till now have not yet become members.

As I know that several countries have not joined for the reason that the scientists of the Central Powers were excluded, I might begin with the statement that this exclusion has been completely withdrawn. In its meeting of June 29, 1926, the International Research Council not only took away the former barrier, but it invited Germany, Austria, Hungary and Bulgaria to become members of the council and of the unions attached to it. Also it may be fit to mention that at the last meeting of the council on July 13,

1928, a committee was appointed for the revision of the statutes; among the wishes uttered in this respect one was very general; viz., that the union should get a greater independence than hitherto.

Now coming to my arguments it might be asked whether it is justified for the American biologists to stand aside of the International Research Council when nearly all other sciences are organized in unions, composing this council. It is very well known that there exists already a certain tendency to look upon our sciences as being more or less second rate, as compared, e.g., to physics and chemistry, and we ought to do everything we can in order to avoid an increase of this opinion.

But besides this general consideration, the question may be put, what benefit can result from the existence of a Union of Biological Sciences. I should like to put as a general answer that such a union may be useful in all those cases which can be solved only by international cooperation. Without exhausting this question here, a few instances may be given where such a cooperation is, or may be, profitable.

The most important, but also the most difficult, case is that of scientific reviews. The bulk of literature is increasing in such a manner that even public libraries will be very soon at the end of their resources. Only by mutual understanding it may perhaps be possible to find a solution to this threatening danger to science. On the other hand it must be possible to come at some international understanding as to the *Centralblätter*, *Abstracts*, etc., otherwise here again we will get more and more confusion without real help to science. It can not be said that this has to be done by zoology or botany alone, because there are many journals concerning both domains, such as *Protoplasma*, *Biologisches Centralblatt*, etc.

Secondly, the Union, or rather its sections (zoological, botanical, etc.) could be a connecting link between the succeeding international congresses. Up till now almost every one of these congresses was independent of its predecessors. Even if this should remain so, some kind of link might prove to be useful, especially when it becomes clear that something must be done in order to diminish the avalanche of oral contributions to each congress. Of course every congress might do this on its own, but it certainly would be much better if it could make use of the experience of its predecessors by means of a connecting link.

In the third place questions of nomenclature in zoology and botany will have to be settled by some international organization to come to a result which may be accepted universally.

In the fourth place it is desirable to form a bureau where it may be possible to get information about

the way in which living material for scientific work can be procured. In the last meeting of the Union at Brussels a motion on this question was accepted, but the funds of the Union are not yet sufficient to do more than make a preliminary investigation in this respect. It would be highly desirable to come to an international agreement in order to avoid customs house difficulties for shipments of this kind.

As a first step in this direction the Central Bureau of Fungi may be mentioned, which is now established at Baarn under the supervision of Miss Westerdyk; at the present moment about three thousand species of fungi are cultivated there and sent to investigators all over the world. This bureau owes its origin to the former Association internationale des botanistes; this association perished during the war and the bureau could only be continued by the aid of the Amsterdam Academy of Sciences. Now the Union of Biology gives a subvention; it is represented in the Council of the Bureau.

A repository of microscopical slides in the domain of cytology will be established by the union in the laboratory of Professor Grégoire at Louvain. His great authority in this field will guarantee that these slides will be preserved in the best way in order to enable any investigator to study them there. Many controversies will disappear as soon as it becomes possible to compare preparations of different investigators in the same field.

Another plan which has not yet come into execution consists of the establishment of a repository for slides in the domain of botanical embryology. Likewise it may be possible to create something similar with respect to paleontological sections in some center of scientific work which is specially adapted for this purpose.

Plans have been prepared in order to make it possible to know where material collected by scientific expeditions has been preserved and where it may be studied.

These are a few of the possibilities of work for the International Union of Biological Sciences, already partly begun. Some of these are in the domain of zoology, others in that of botany, whereas some have a general biological scope. In this last respect may also be mentioned attempts to organize international preservation of nature. Especially with regard to those questions which have relation both to zoology and botany it seems advisable not to split up the Union into a botanical, a zoological or a physiological one, though every section will enjoy as much independence as possible.

At the present moment the Executive Committee of the International Union of Biological Sciences is



constituted as follows: F. Went, Utrecht, president; M. de Selys Longchamps, Brussels, secretary; A. Pictet, Geneva, treasurer; vice-presidents are the presidents of the sections and also the following: E. Terroine, Strasbourg; F. Botazzi, Naples; A. Lameere, Brussels.

The committees of the sections are constituted as follows: (a) Zoology—Odo de Buen, Madrid, president; M. Siedlicki, Cracow, vice-president; C. Verne, Paris, secretary. (b) Botany—B. Nemeč, Prague, president; K. Shibata, Tokyo, vice-president; J. Briquet, Geneva, secretary.

I conclude by expressing the wish that many countries which up till now have not joined the union will do so, because only then the union will become strong enough to undertake such work as will benefit biological sciences.

F. A. F. C. WENT

## QUOTATIONS

### INTELLECTUAL COOPERATION

THE movement towards what is known as intellectual cooperation, fostered by the League of Nations (writes our correspondent from Geneva), is steadily gaining ground. The Institute of Intellectual Cooperation, domiciled in Paris but a league offspring, is now subsidized by eleven nations. The committee which takes this sphere of the league's work under its control is presided over by Professor Gilbert Murray, in succession to the late Professor Lorentz, and has among its members some eminent European scientists, including more than one professor of medicine. Professor Gilbert Murray reported to the present assembly that interchanges of professors and students between universities in different countries had been encouraged, and that there was now proceeding an interchange of secondary-school teachers. These interchanges are of the same character as those of public-health officers, undertaken by the Health Organization, and appear to be equally fruitful. It is noteworthy that the American Council of Education has placed a sum of money at the disposal of the committee for the purpose of an inquiry into university relations in Europe and the facilities available there for American students. The question of traveling or exchange scholarships has been remitted to a committee of experts with a view—the reference is rather vague—"to reaching conclusions that will be applicable not only to scientific laboratories, but also to research institutes, in the field of humanities and social science." A draft convention has also been formulated with the object of assuring for scientists the financial benefits which are justified by the profitable

use of their discoveries—in other words, to prevent the unauthorized and unacknowledged use in one country of the work of a scientist of another. The British government, however, has found some technical fault in the convention, which as drawn up, it considers, would interfere with industrial activity, and the matter has not at present gone further than the sphere of proposal. An attempt is being made to bring libraries and universities of all countries into a scheme of cooperation whereby scientific or bibliographical information may be made mutually available. Another enterprise aims at the removal of undue hindrances, in the shape of customs barriers and postal tariffs, to the international distribution of books. It is intended to urge that scientific works, particularly works intended for libraries and scientific institutions, should be exempt from customs duties. The question of scientific works published in the less known languages has also received attention; it appears that in the countries where such works have been published there is already a sufficient recognition of the need of securing translations in one or other of the more widely diffused languages. The language difficulty, as any one who has attended an international congress will agree, is the principal hindrance to full international cooperation and understanding. In spite of the skilled army of interpreters at Geneva, difference of language is a constant impediment, leading every day to embarrassment and frustration, and sometimes to even more disagreeable results. If the Committee on Intellectual Cooperation would urge a wider acquaintance with the French language amongst English-speaking peoples, and with the English language among the Latin peoples, a great deal of good might be done.—*The British Medical Journal*.

## SPECIAL ARTICLES

### ALTERATIONS OF TISSUE CELLS IN THE BLOOD STREAM

CERTAIN aspects of the origin and development of blood cells are difficult to study because of the different fixation and staining qualities of the cells in the bone marrow and those in the blood stream. Fixation of the cells for sectioning changes their morphology so that they are no longer comparable to the pictures obtained when blood films are made. Some of the differences can be eliminated if bone marrow is shaken with blood serum or pleural or ascitic fluid. The cells separate easily, and cover-glass films can be made similar to those of blood. This method was found to be feasible for the study of tumor tissue, and was especially applicable for the study of mitotic figures. The phenomenon was first noted while studies of tissue

metabolism were being made in a microspirometer.<sup>1</sup> The cells can be studied in the moist state directly or with vital stains, or can be dried on cover-glasses and stained with the usual methods. A remarkable change takes place in the staining qualities of the marrow cells when they are exposed to blood serum, either by shaking or by treating bone marrow smears or sections with blood serum. The cells take the stain intensely instead of the paler tint usually noted in bone marrow films, especially when stains such as Wright's stain are used. *Exposure to serum causes the cells to stain similar to those of the blood stream*, so that it is much easier to identify tissue cells in their genetic relation to those of the peripheral circulation. The change in the staining qualities emphasizes the marked difference in the chemical and physical environment of the cells in the tissues and those in the blood. It suggests something of the altered physiology of the cells in the bone marrow and their change in function when they enter the blood stream. It makes it appear more improbable that cells, which should mature in the tissues, ever continue their normal development when forced prematurely, under abnormal conditions, into the circulation. Dissociated cells of other organs, as the spleen, as well as tumor tissue, show changes after treatment with blood serum which enable their identification when they appear in the peripheral circulation. The mechanism of the change in staining qualities does not appear to be one of change in hydrogen-ion concentration only, although this may be one factor.

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#### ABERRANT HETEROTHALLISM IN A HOMOTHALLIC COPRINUS<sup>1</sup>

IN connection with cytological studies in the Agaricaceae, the writer has made single-spore isolations to determine the sex reactions of the species studied. Previous workers have shown that certain Hymenomycetes are regularly homothallic, whereas others are regularly heterothallic. Their results have been verified in general, but in some cases interesting exceptions have been encountered.

A form of *Coprinus ephemerus* Fries, in which the basidia are two-spored, was isolated. This form seemed at first to be homothallic, since mycelium from single spores in most cases developed clamp connections, the cells of the mycelium were binucleate, and

fruit bodies were produced. Some exceptions to this behavior were observed, and by making a large number of isolations, a few viable mycelia were isolated, in which the cells became permanently uninucleate, clamp connections were not formed and no fruiting occurred. These exceptional mycelia had all the characteristics of the primary condition. When they were paired in all possible combinations, mating occurred between certain pairs, giving rise to a mycelium with binucleate cells and clamp connections.

TABLE I

SAMPLE OF THE DATA OBTAINED IN THE PAIRING OF  
PRIMARY MYCELIA OF THE TWO-SPORED FORM OF  
*Coprinus ephemerus* Fr.

	7	6	5	4	3	2
1	-	-	-	-	-	+
2	+	+	-	+	+	
3	-	-	-	-		
4	-	-	-			
5	-	-				
6	-					

Table I is a fair sample of the results obtained. It demonstrates the inadequacy of the hypothesis that one pair of Mendelian factors (Aa) determine sex in this case. If we arbitrarily assign factor (A) to mycelium No. 1, mycelium No. 2 with which No. 1 crosses, must be given the factor (a). Then it follows that mycelia 3, 4, 6 and 7 also have the factor (A). But No. 5 does not conform to this scheme because it neither crosses with (A) or (a). Obviously, there is no strict segregation into two functional sex classes and it seems probable that a functional sexual mycelium is determined by more than one pair of factors. It is definitely established, however, that in a normally homothallic form there are occasional haploid, primary mycelia, which cross in certain pairings, giving rise to apparently normal diploid, secondary mycelia.

The fruit body is also diploid, karyogamy and meiosis taking place in the basidium. Each basidium contains four nuclei just prior to spore formation. Two spores develop on the basidium and the writer has found that a spore may receive either one or two nuclei. It may be presumed that a spore which receives two nuclei of the proper kind carries the factors necessary to produce a secondary fruiting mycelium and is therefore homothallic. On the contrary, a spore which receives one nucleus does not have a complete set of sex factors, and its haploid mycelium must be crossed with another mycelium which carries the necessary allelomorphs in order to bring about the secondary condition. The cytological data are in harmony with the available cultural data. A full account of the writer's work will be published in the near future.

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<sup>1</sup> G. A. Daland and Raphael Isaacs, "Cell Respiration Studies," *Jour. Exp. Med.*, July, 1927, 46, 53.

<sup>2</sup> Papers from the Department of Botany of the University of Michigan, No. 300.